MISSOURI BOTANICAL GARDEN
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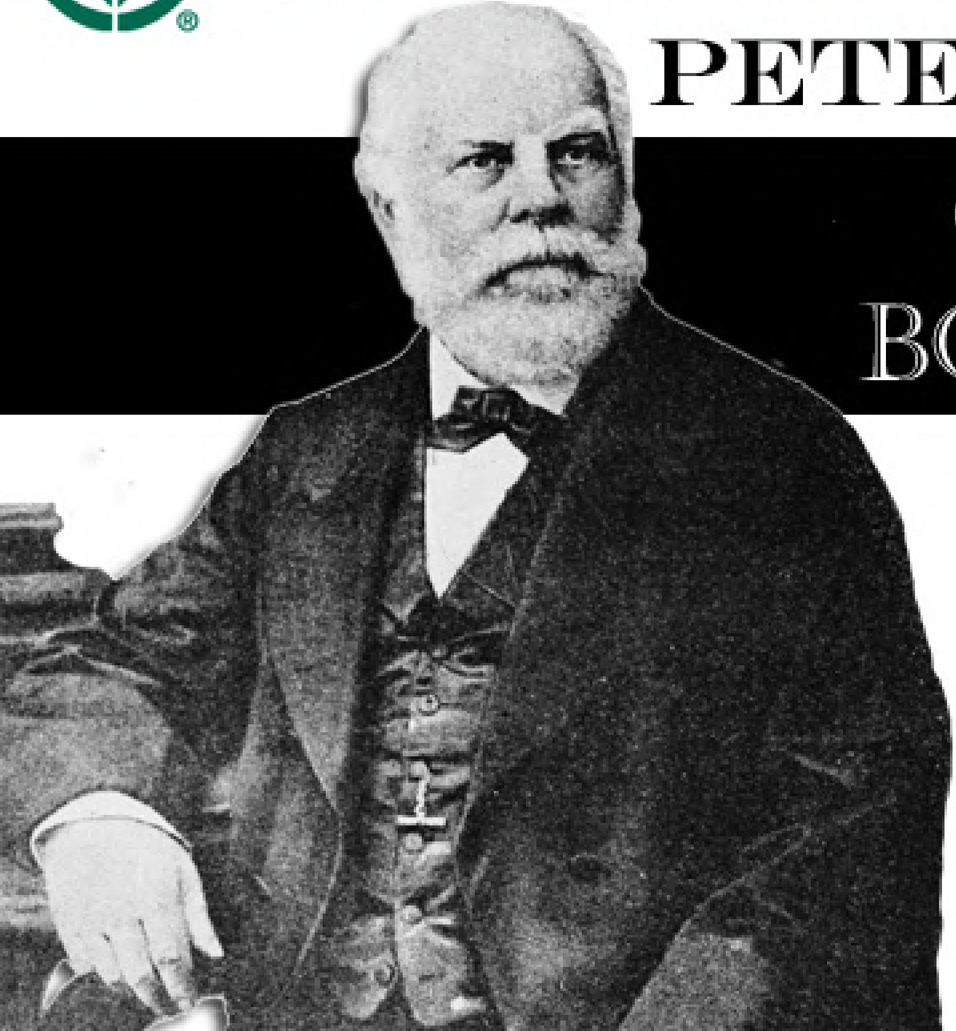
GEORGE ENGELMANN BOTANICAL NOTEBOOKS



Pagination Note:
Since many of the items lack a specific page number, the page number displayed online refers to the sequentially created number each item was given upon cataloging the materials.

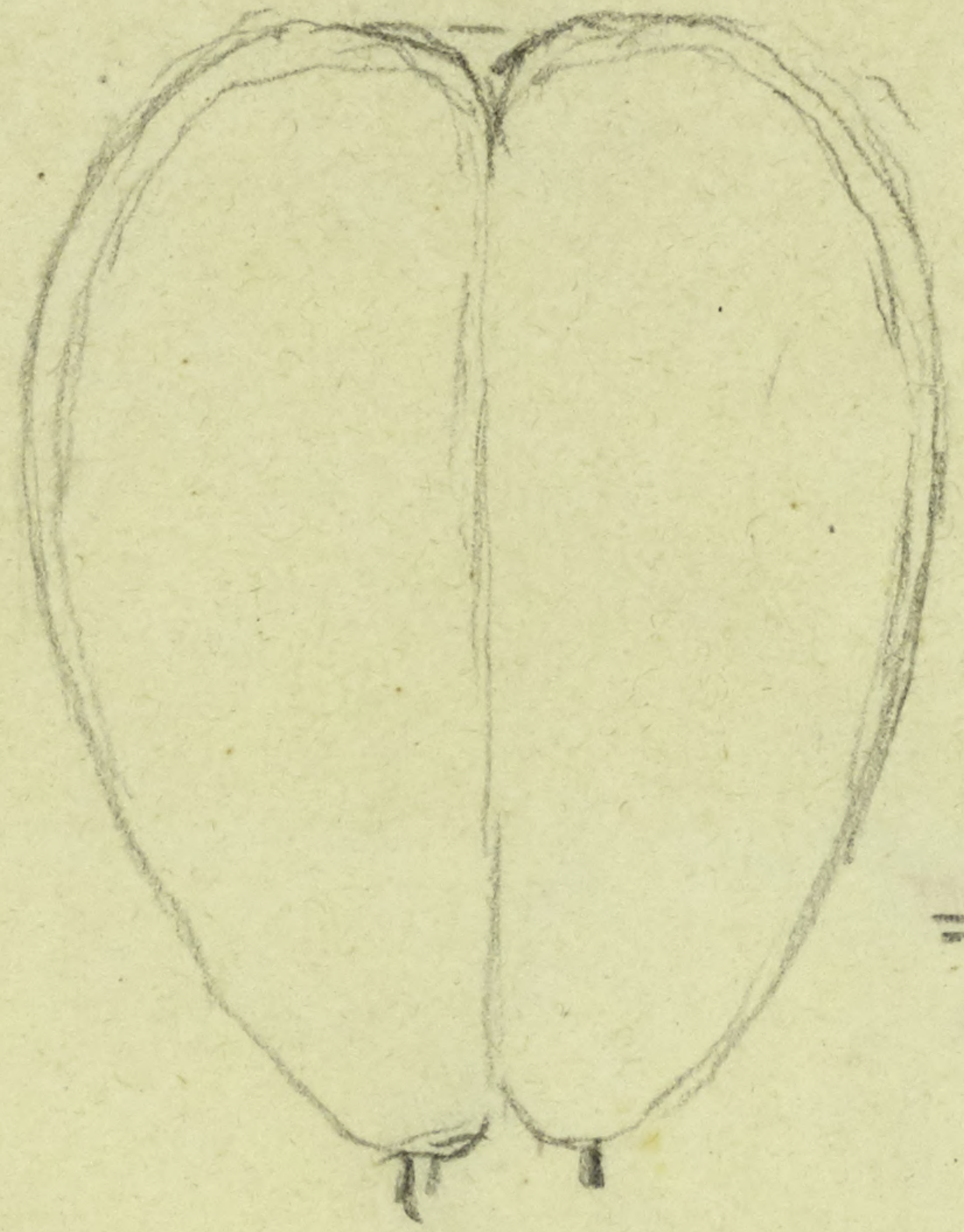
SHOUT
SHARE
IT

Callitr. verna

March 15 1865

" California Bigelow - in Exp. Whipple 1853/4
mixed with C. Asa Grayi;
same locality?
broad- and large leaved form

Tamal Pass, April 11th
1854
See Bot. Whippl. p 135



$$\frac{34 \times 43}{30}$$

$= 1.1 \times 1.4$ mm

896

ALEX. LEITCH,
APOTHECARY & PHARMACEUTIST,
Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

896A

so much interest among scientific men.* And such was his energy that, almost unaided, he gathered in a few weeks the extensive collection of fossil bones which furnished to Dr. Leidy the materials for his splendid memoir on the "Extinct Fossil Fauna of Nebraska." At the same time he collected a large and elegant series of Cretaceous fossils, some of which were described and figured by Dr. Owen in his final report on the Geology of Iowa, Wisconsin and Minnesota. The notes made by Dr. Evans on the geological features of that remarkable region were likewise of the highest interest, and from these Dr. Owen has compiled one of the most instructive and beautiful chapters to be found in his valuable report. In addition to his scientific duties, Dr. Evans had almost exclusive control of the business department of Dr. Owen's survey, which of itself involved an immense deal of labor. The satisfactory manner in which he discharged these onerous duties, often in the midst of disheartening privations and even danger, commanded the highest esteem and confidence of Dr. Owen and his associates, while his goodness of heart, uniform courtesy, and self-sacrificing disposition, secured to him their warmest friendship.

After the completion of the field work of the North-west Survey, (1850,) Dr. Evans received the appointment of U. S. Geologist for Oregon, which he accepted, and immediately entered upon the duties of his new office with his usual energy and zeal. The survey was organized by the appointment of Dr. B. F. Shumard to the position of Principal Assistant, who shortly after embarked for Oregon, by way of the Isthmus of Panama. Dr. Evans determined to revisit Nebraska, and thence proceed overland to Oregon by an unexplored route, with the view of determining the general geological and topographical features of a vast region, then almost unknown to science, and of ascertaining if there existed a nearer way from the Upper Missouri to the Oregon coast than that usually travelled. He proceeded to St. Louis, and there spent a few days in making preparations for his journey. He then took passage for Fort Pierre Chouteau, on board a steamer belonging to the American Fur Company. During this passage, which occupied nearly a month, cholera to an alarming extent prevailed among the passengers and employees of the Fur Company on board, several of whom died, and the mortality would have been far greater but for the kind attention of Dr. Evans, who, though himself laboring under an exhausting diarrhœa, allowed himself no rest, but in the triple capacity of physician, nurse and companion, was ever at the bed-side of the sick, administering to their wants, and encouraging them by his cheering words.

From Fort Pierre, Dr. Evans again visited the Mauvaises Terres, where in a short time he succeeded in obtaining a large collection of the fossil fauna of that region, even more extensive than his former one, and embracing a considerable number of new and interesting species. On his return to the Fort he set about preparing for his long journey, which from the hostility of the Blackfeet and other Indian tribes, together with the difficulties incident to the route, was regarded by the Indian traders as extremely hazardous; hence it was exceedingly difficult to find either guides or hunters willing to accompany him. After much persuasion, however, he succeeded in procuring the services of two hunters and a half-breed guide, they agreeing to go with him as far as the Flathead Village. With this meagre escort he started from Fort Pierre, but scarcely had he reached the borders of the Blackfeet country ere his hunters became alarmed, and unceremoniously left his camp during the night and returned to the Fort. Under these discouraging circumstances a person less courageous than Dr. Evans would have turned back; but difficulties served only to develope the indomitable

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* To Dr. Hiram A. Prout is justly due the credit of having first called attention to the existence of such remains in that region by his excellent memoirs of Palæotheroid and other bones, published in Silliman's Journal.

Callitriche verna

genuina

Americana

5-3-61

fruit

0.8 – 1.1 mm broad

1.1 – 1.4 – high

energy of his character, and with but a single man as his escort, and no other guide than his compass, he determined to continue on his course. After a wearisome travel of many days, and having encountered many privations and dangers, he and his companion, Cadotte, arrived safely, but in almost a starving condition, at the Flathead Village, situate on the western slope of the Rocky Mountains. In accomplishing this part of his arduous task, Dr. Evans passed directly through the heart of the Blackfeet country, and travelled a distance of more than two hundred miles in the main chain of the Rocky Mountains before he succeeded in finding a passage to the valley beyond. It is much to be regretted that the credit of the discovery of this important pass, which unquestionably belongs to the subject of the present sketch, has been unjustly transferred to another. It should have been named in honor of Dr. Evans instead of Cadotte, since it is well known that the latter person had no knowledge of such a passage, and, in fact, had not even been in that region before he went there under the guidance of Dr. Evans. After a few days' rest at the Flathead Village our traveller resumed his journey, and without encountering further difficulties, reached Oregon city with much valuable information concerning the extensive district of country through which he had passed.

In the prosecution of the geological survey of Oregon and Washington, Dr. Evans was actively engaged for nearly five years, during which period his travels extended over a large portion of those Territories. The results of his important labors, embracing a large amount of information relating to the geology, topography, geography and natural history of that interesting portion of the American continent, are embodied in his large report submitted to, and ordered to be printed by Congress at its last session. It was placed in the hands of the Public Printer only a few days previous to the death of its lamented author, and it is a matter of deep regret, that, owing to some informality, its publication must be delayed to await the further action of Congress. It is earnestly hoped that Congress will, at an early period, make the necessary provision for the printing of this important document, the preparation of which has cost such a large expenditure of labor and money, and which promises to be of the highest value to science and the people for whose benefit the survey was ordered.

September 2, 1861.

The President, Dr. ENGELMANN, in the chair.

Seven members present.

The following donation to the library was received: Bull. de la Soc. Imper. zool. d'Acclimatation, Paris, No. 7, Juillet, 1861, *from the Society*.

Mr. Holmes presented from Dr. B. F. Shumard the following skulls from Texas: *Felis pardalis*, Linn. (Tiger-cat), from Travis Co.; *Felis onza*, Linn. (Jaguar), from Hays Co., and *Dicotyles torquatus* (Peccary), from Travis Co.

Dr. Engelmann made some remarks on the temperature and humidity of the past three summer months. June and August were by more than two degrees warmer than the averages for these months, while July was cooler. The quantity of rain for each of these months was below the average

Call verna

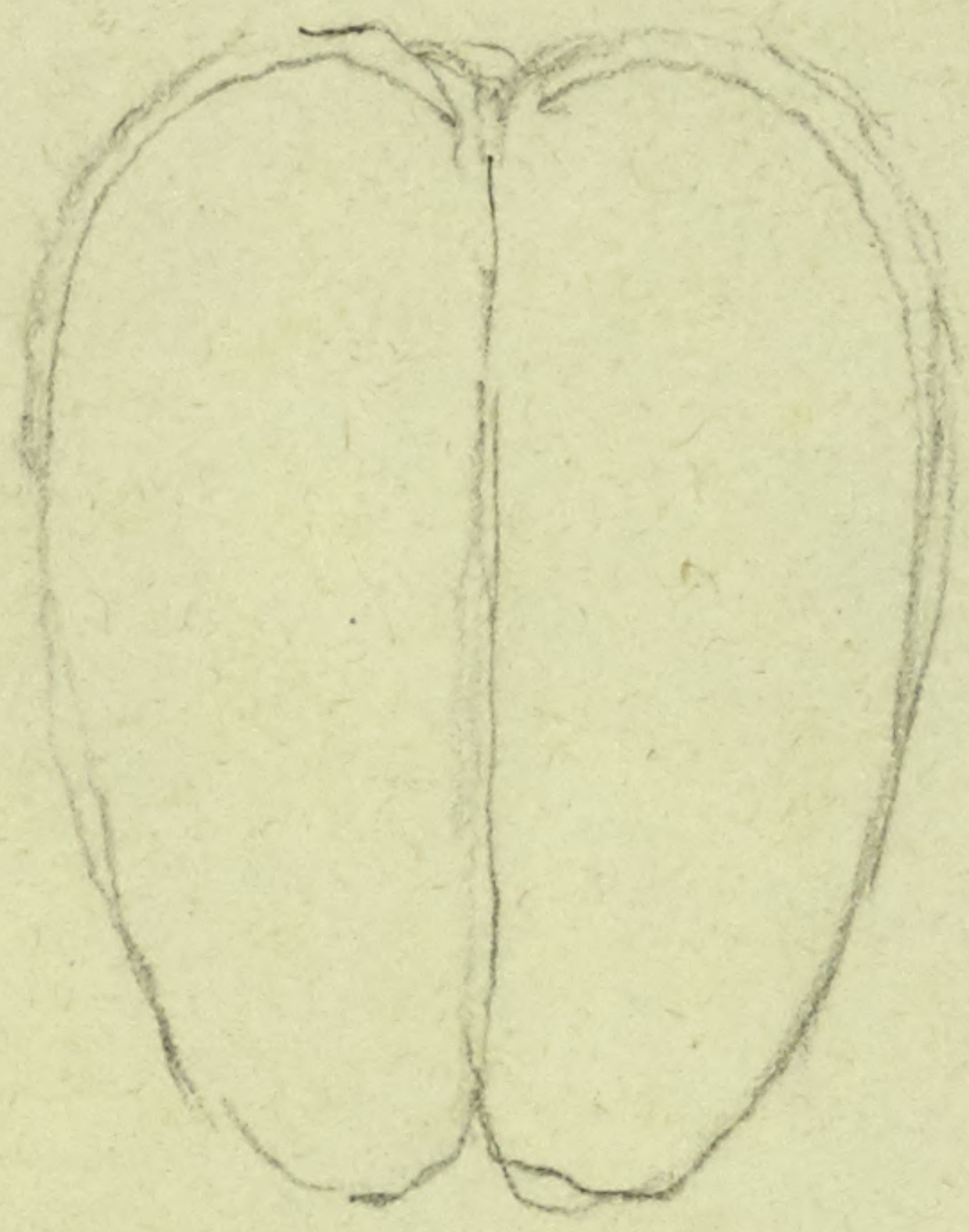
897

March 16 1865

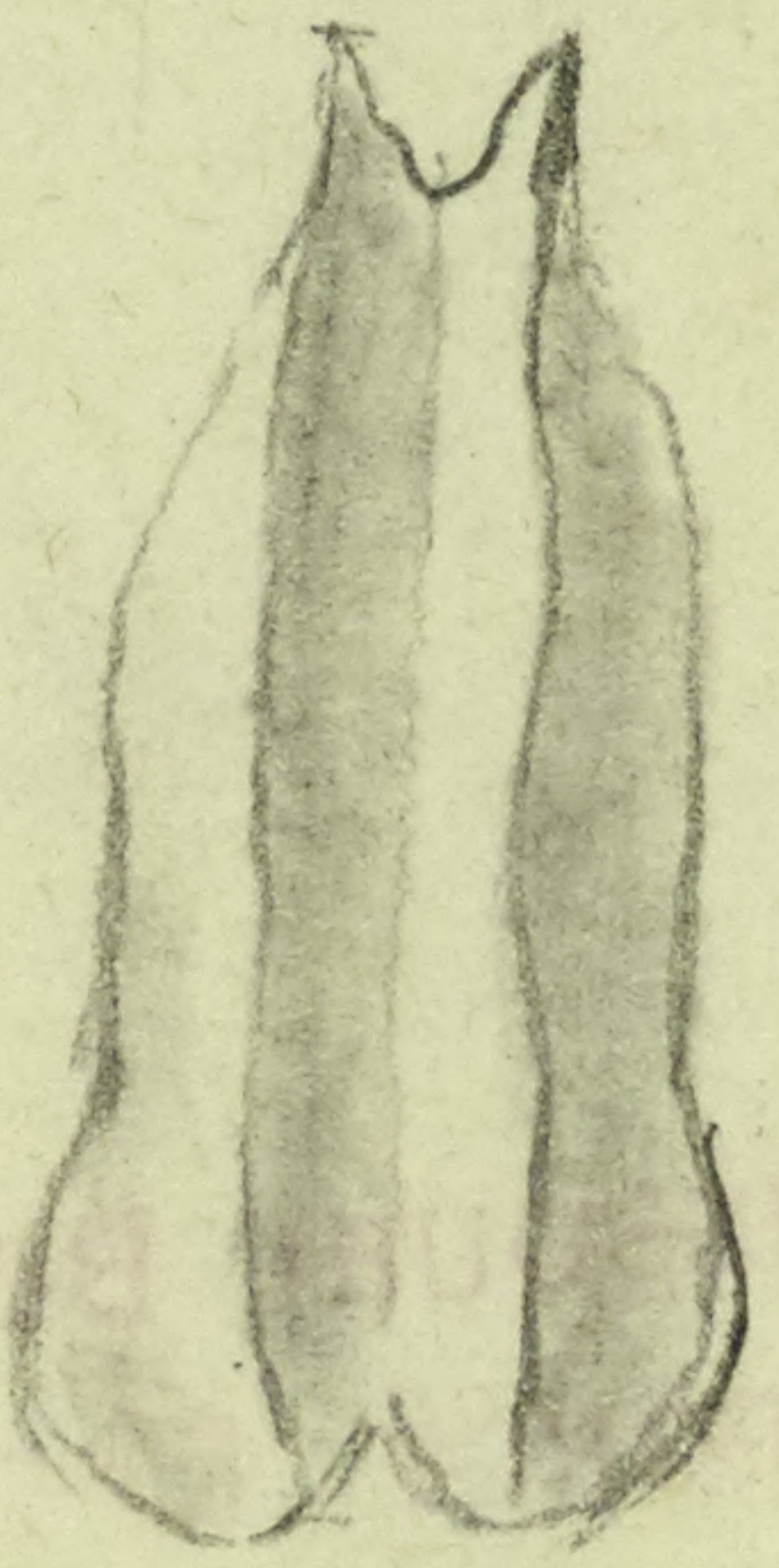
St Croix

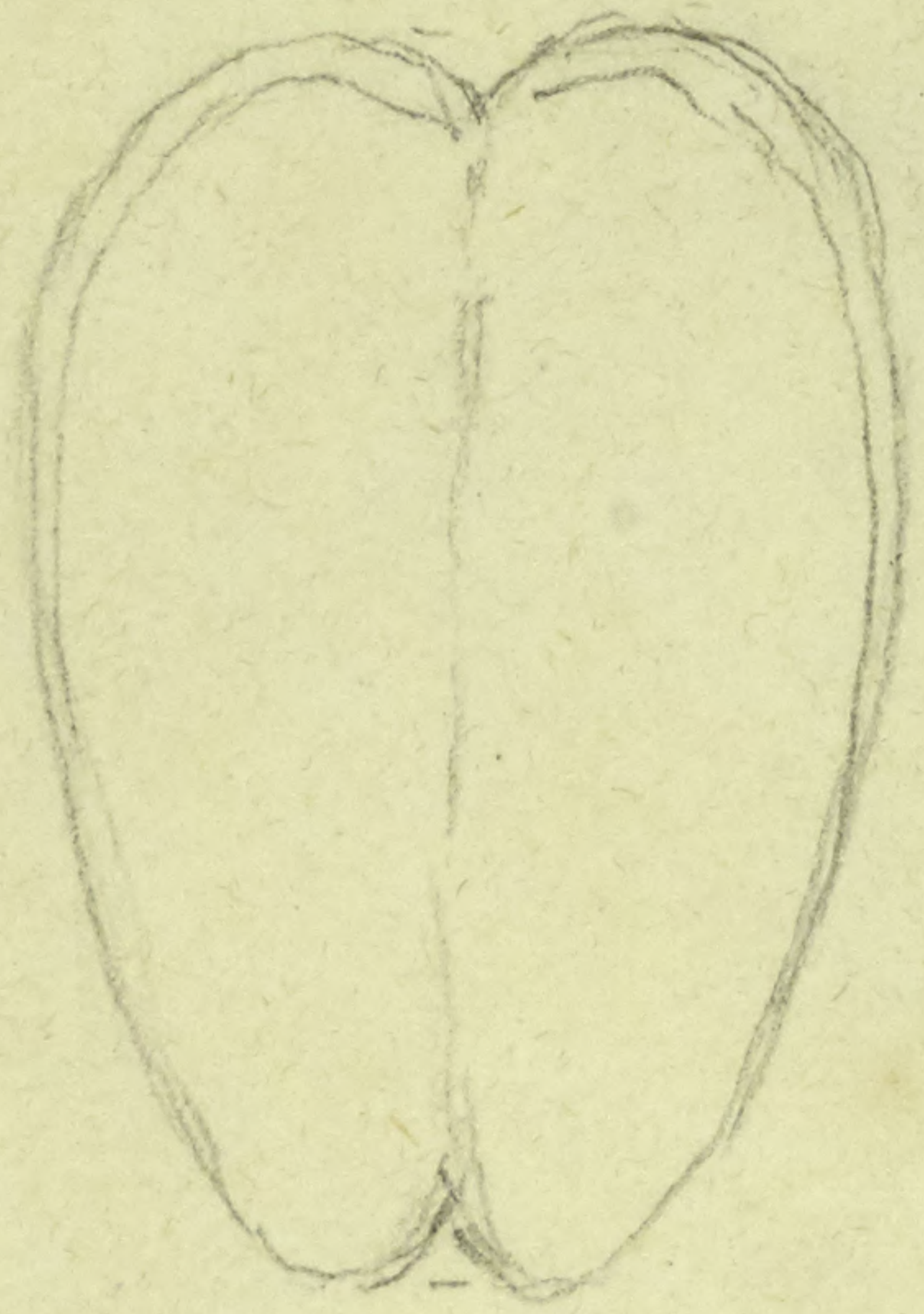
Dr Parry & Mr Torrey

forma inter aquaticam et terrestrem intermedia, homoeophylla.



22 × 29
30
mm
0.7 × 1.0





23 × 34
30
0.8 × 1.1
mm

0 1 2 3 4 5 6 7 8 9 10
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GARDEN

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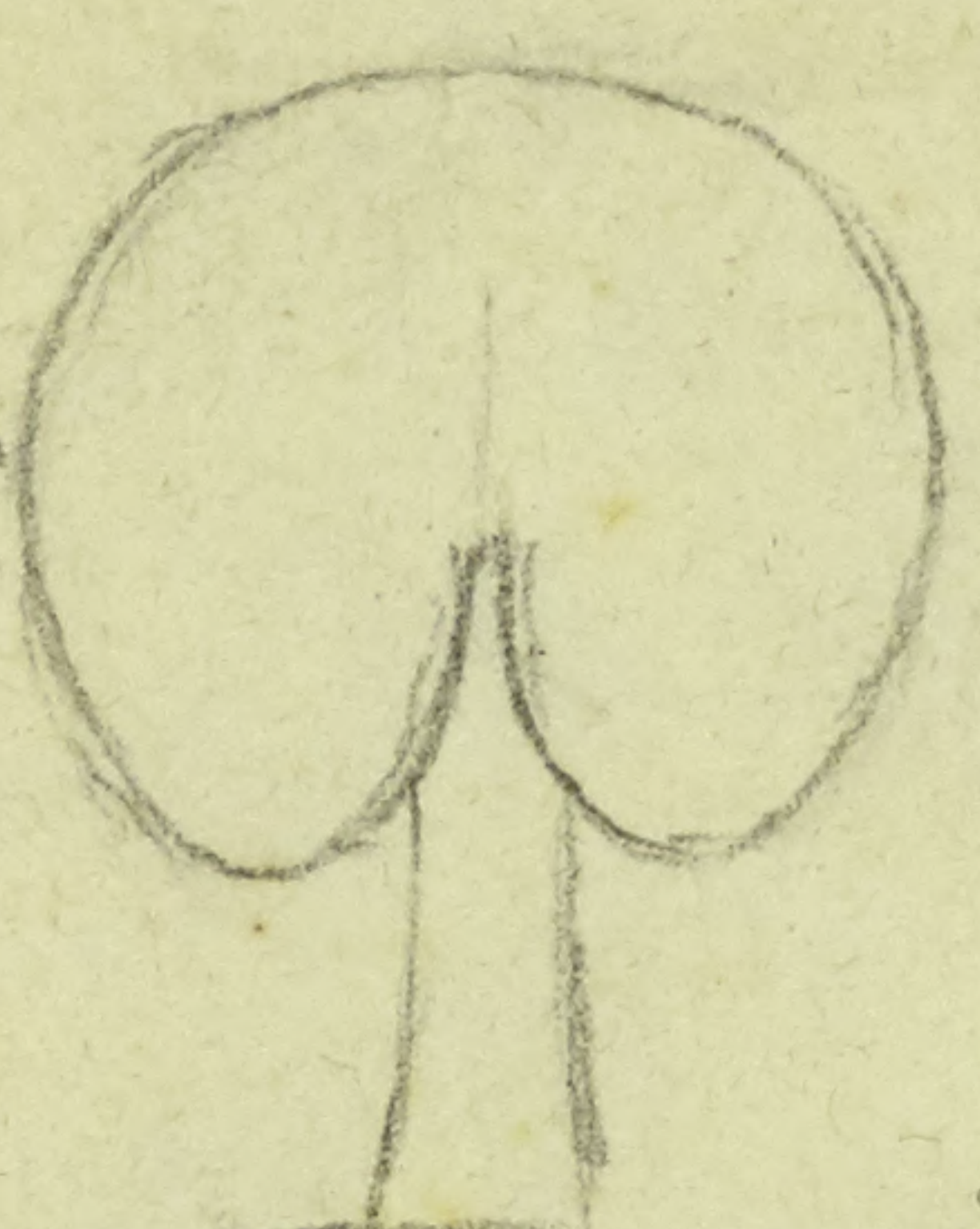
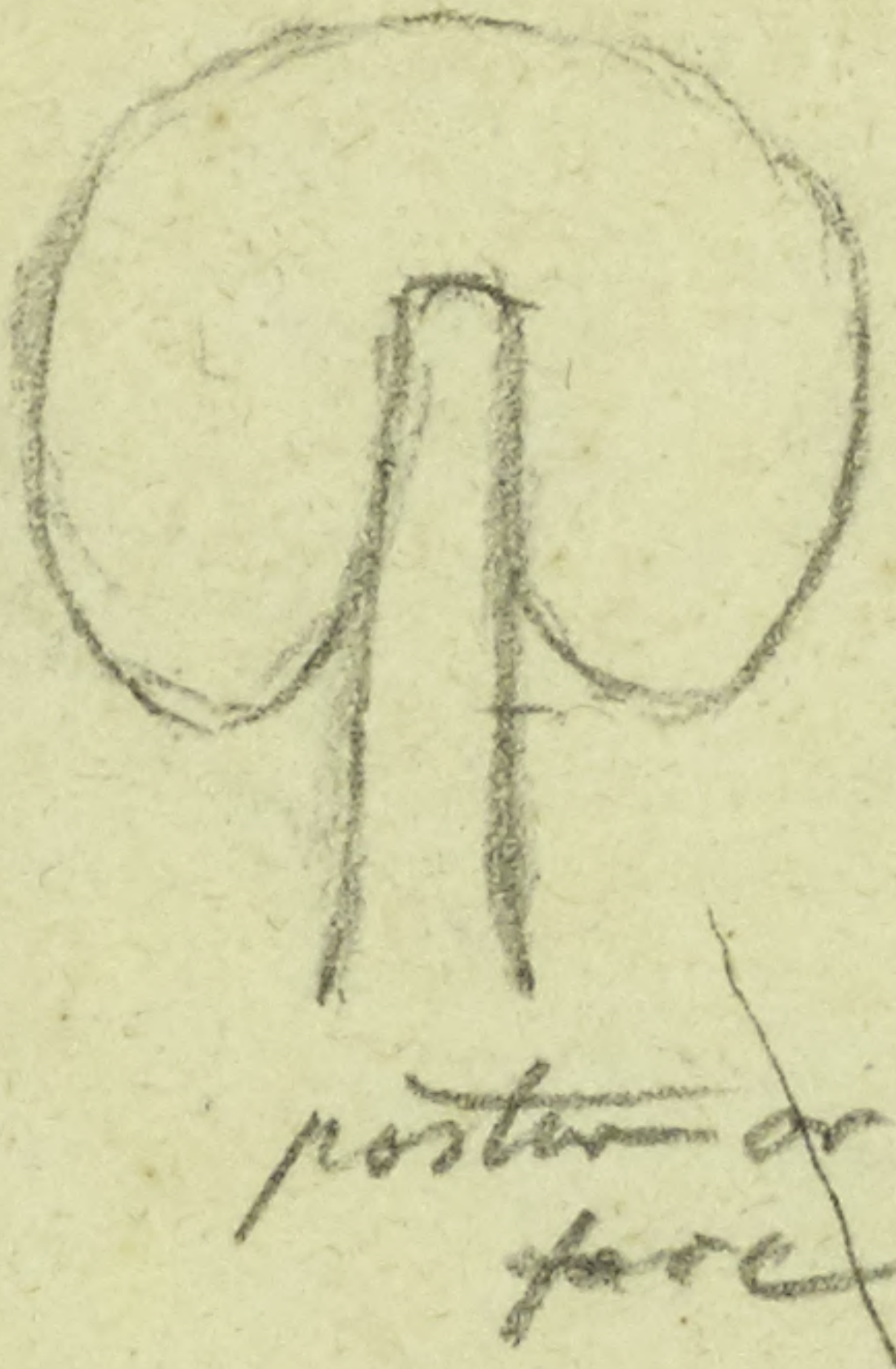
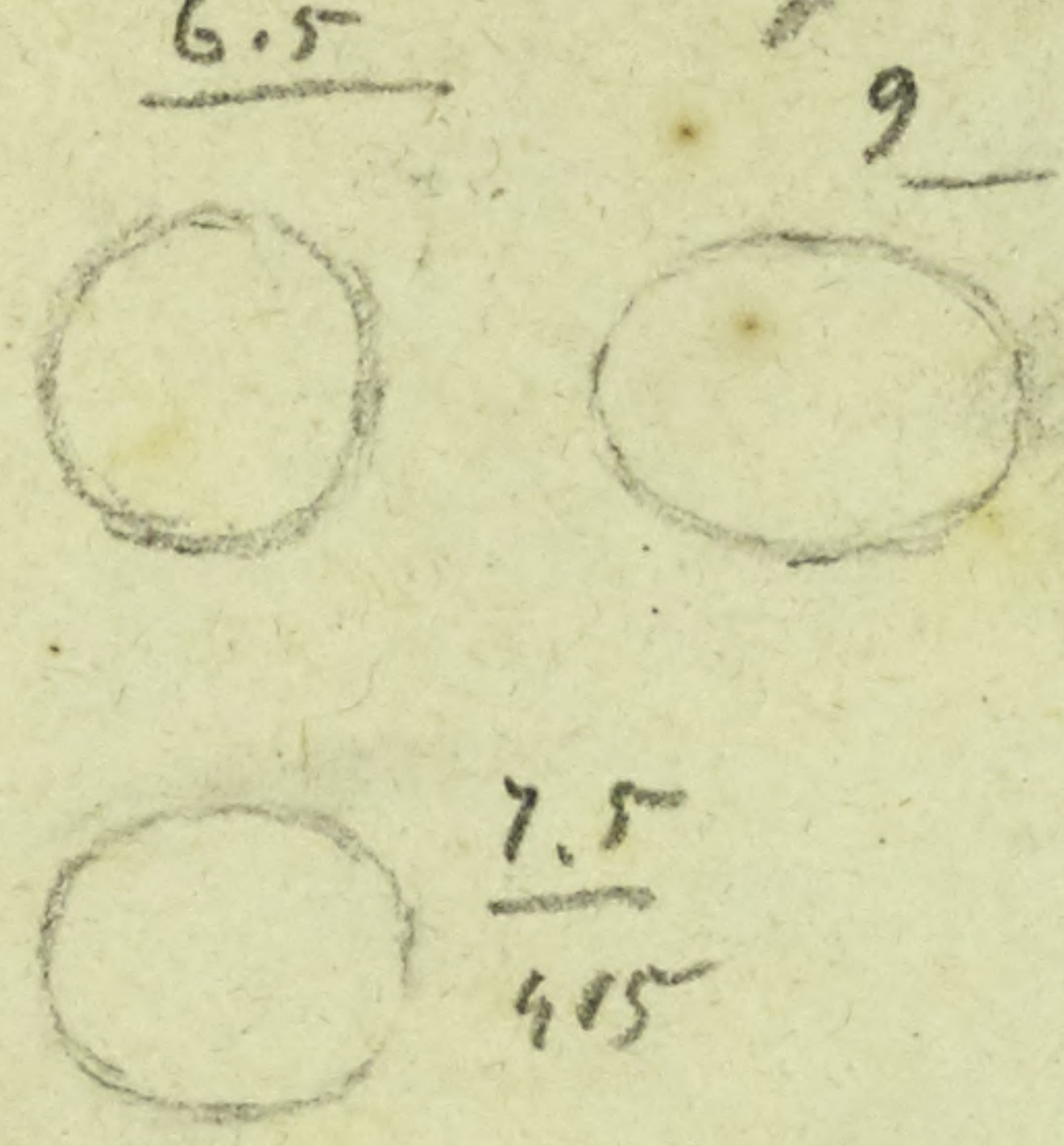
C. verna Jan 27 1865

California, Brewer No 3870

x 30


0.6 mm
diam
anterior or outer

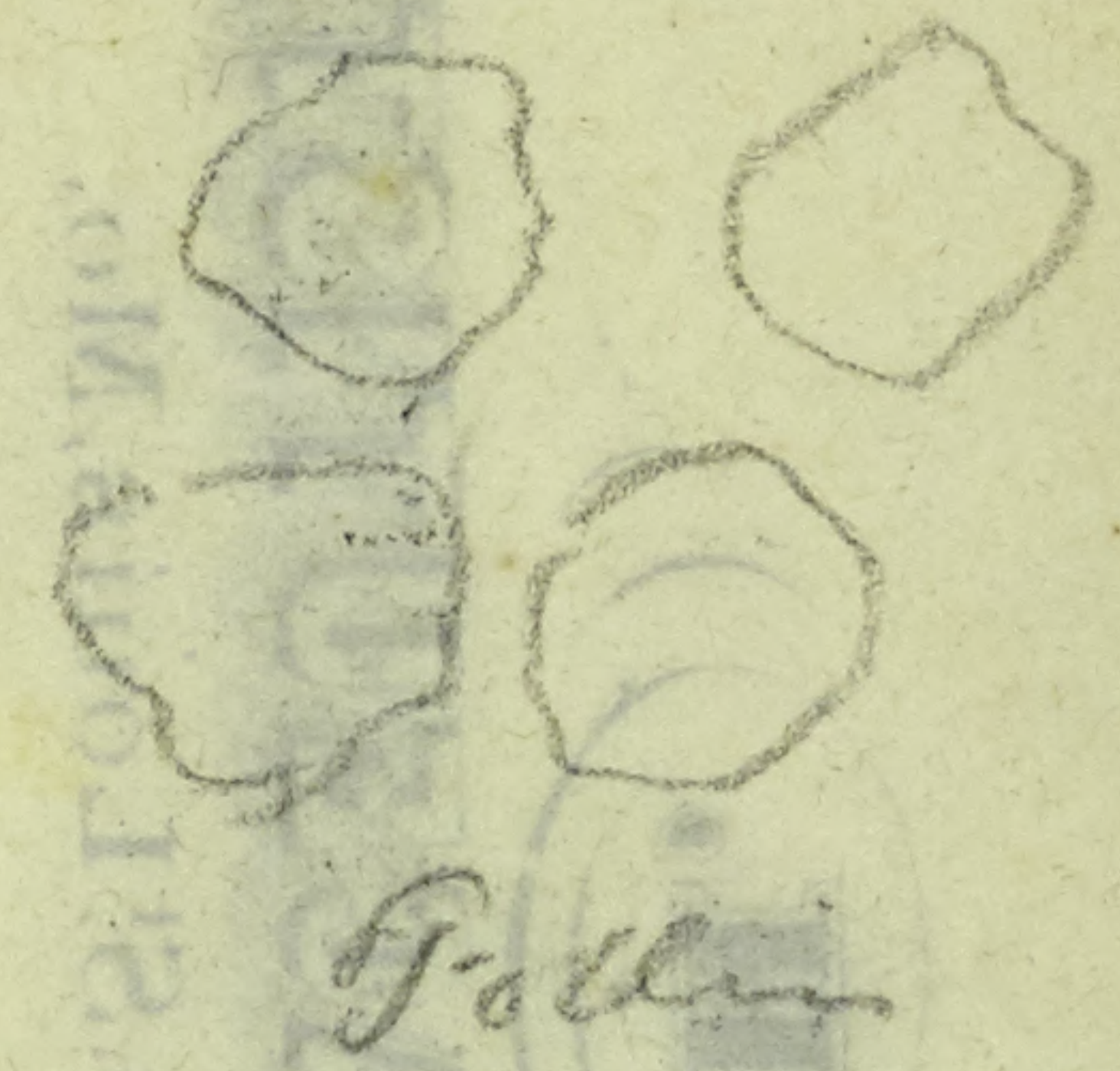

posterior or inner
face



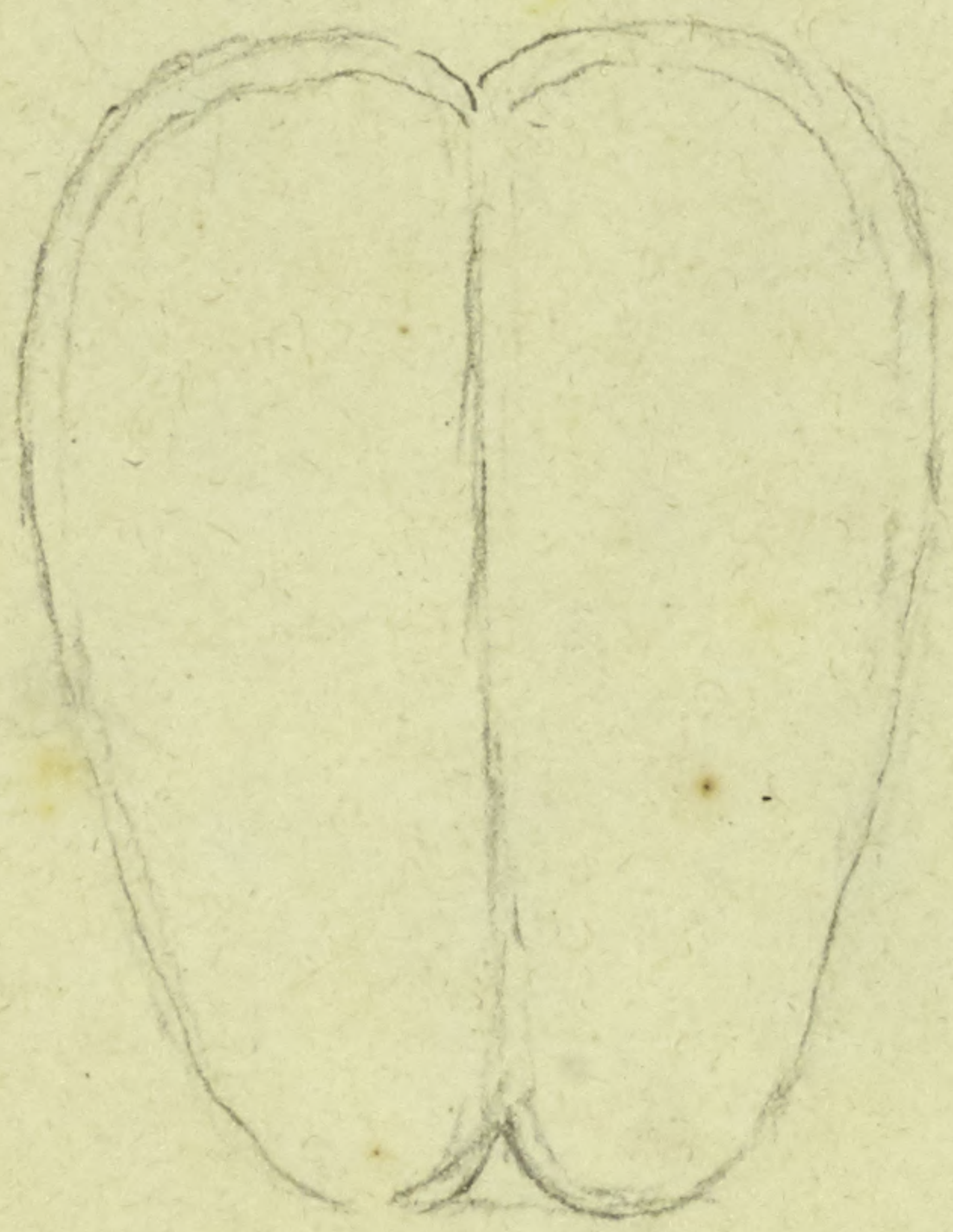
= 0.016 mm

0.018 mm

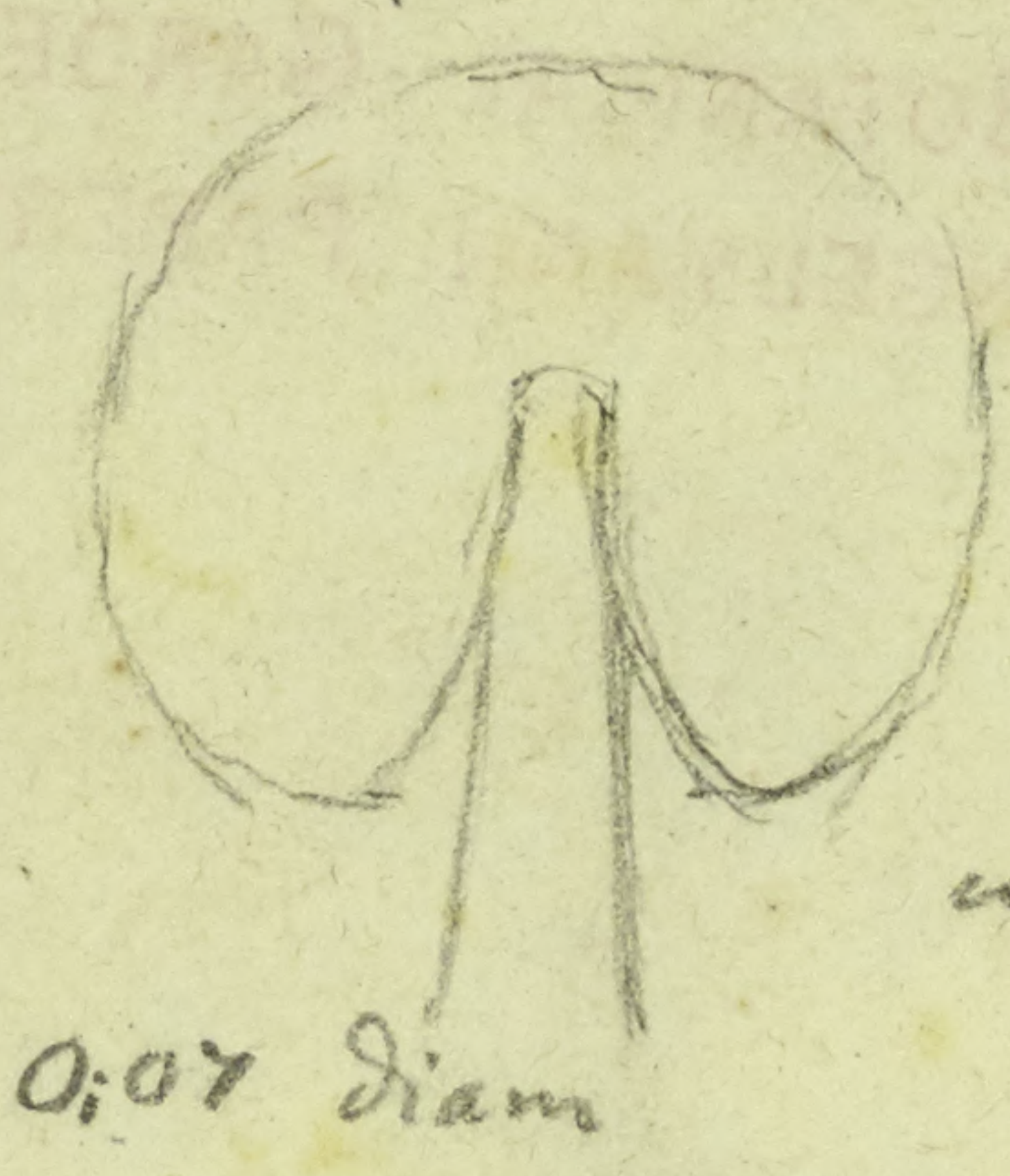
0.022 mm

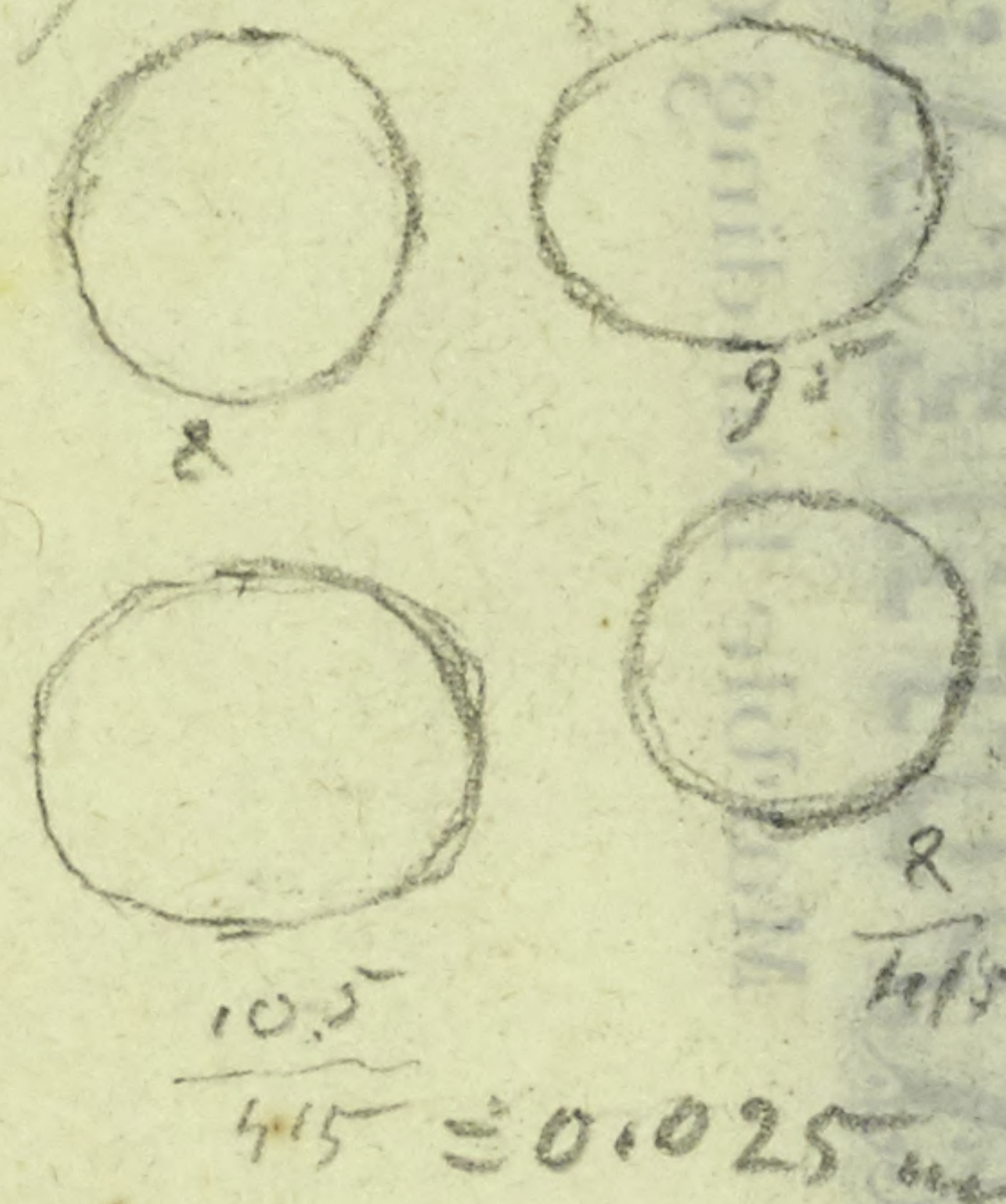


anther very full of Pollen but grains mostly incomplete and perhaps sterile — plant half out of water, half terrestrial?



same anther as above, flattened under the glass

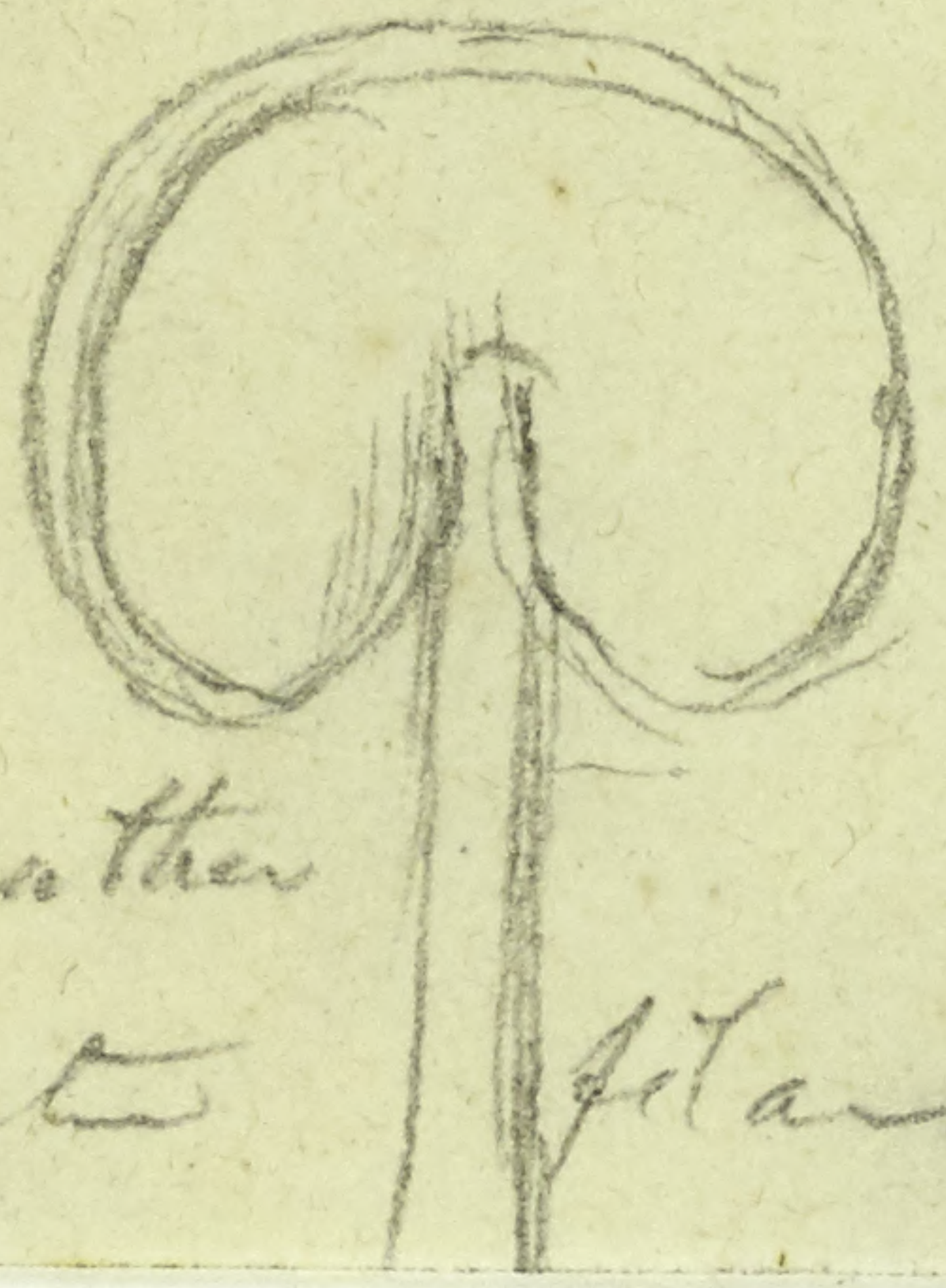



0.020 mm
0.023 mm
8
9.5
0.020
8
415
10.5
415

= 0.025 mm

$$\frac{27 \times 35}{30} = 0.9 \times 1.2 \text{ mm}$$

898



effete anther and elongated filament of same plant

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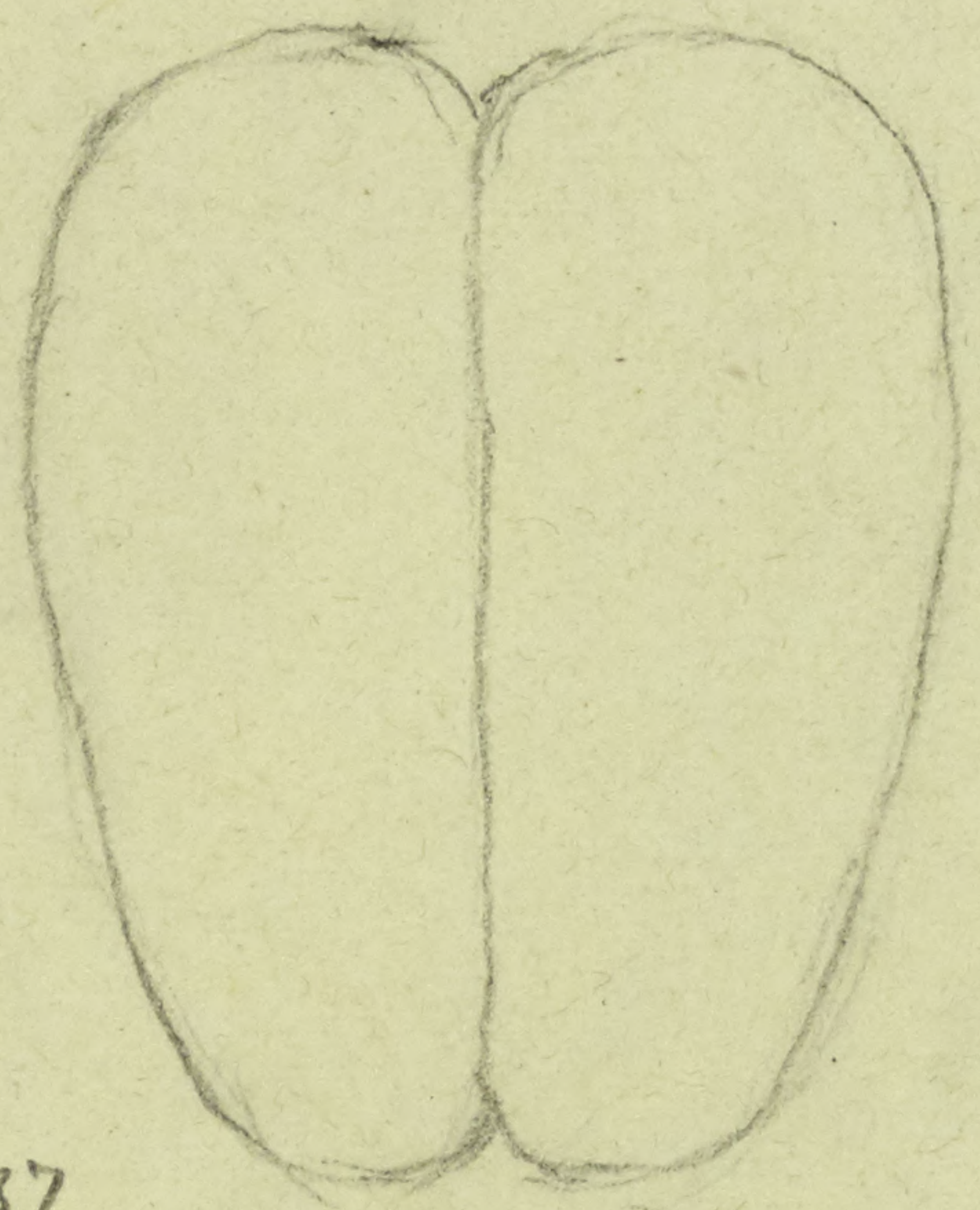
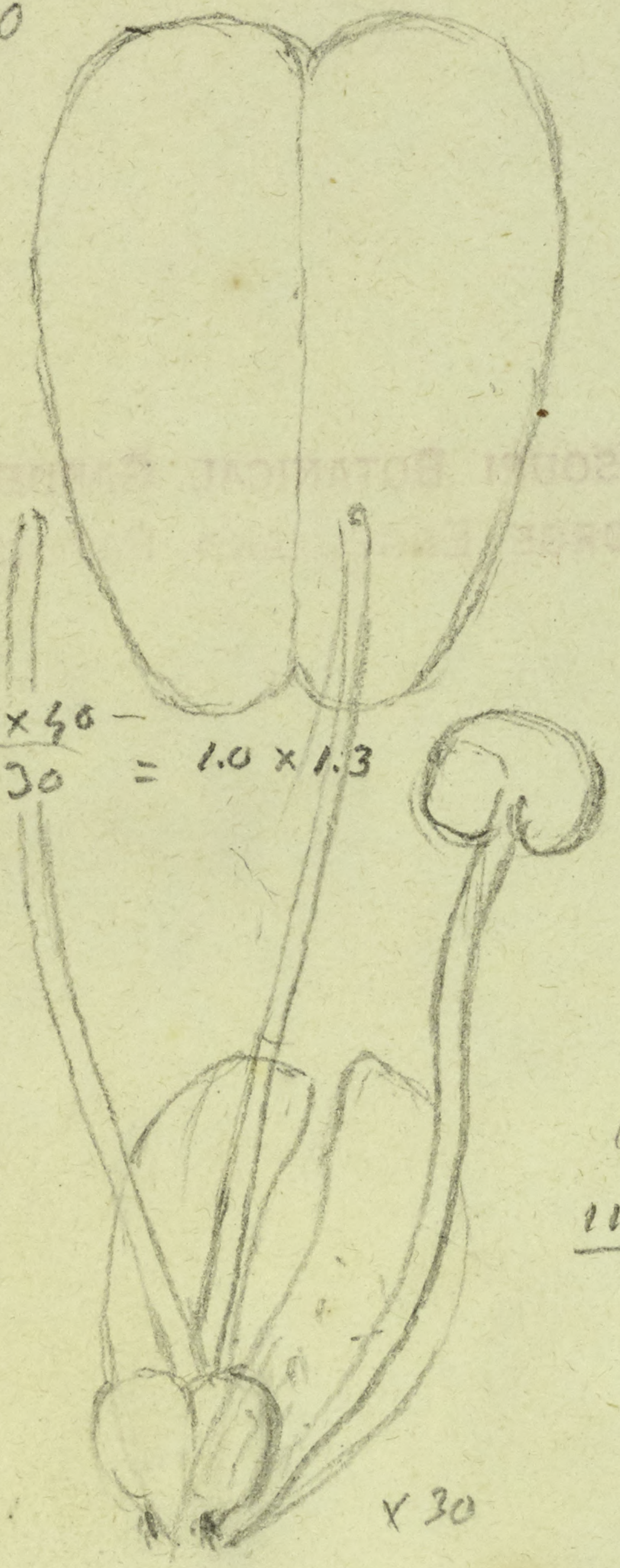
Callitr verna Jan 12 1865
Lake Osborne Aug. 1864
Dr Parry

899

×30

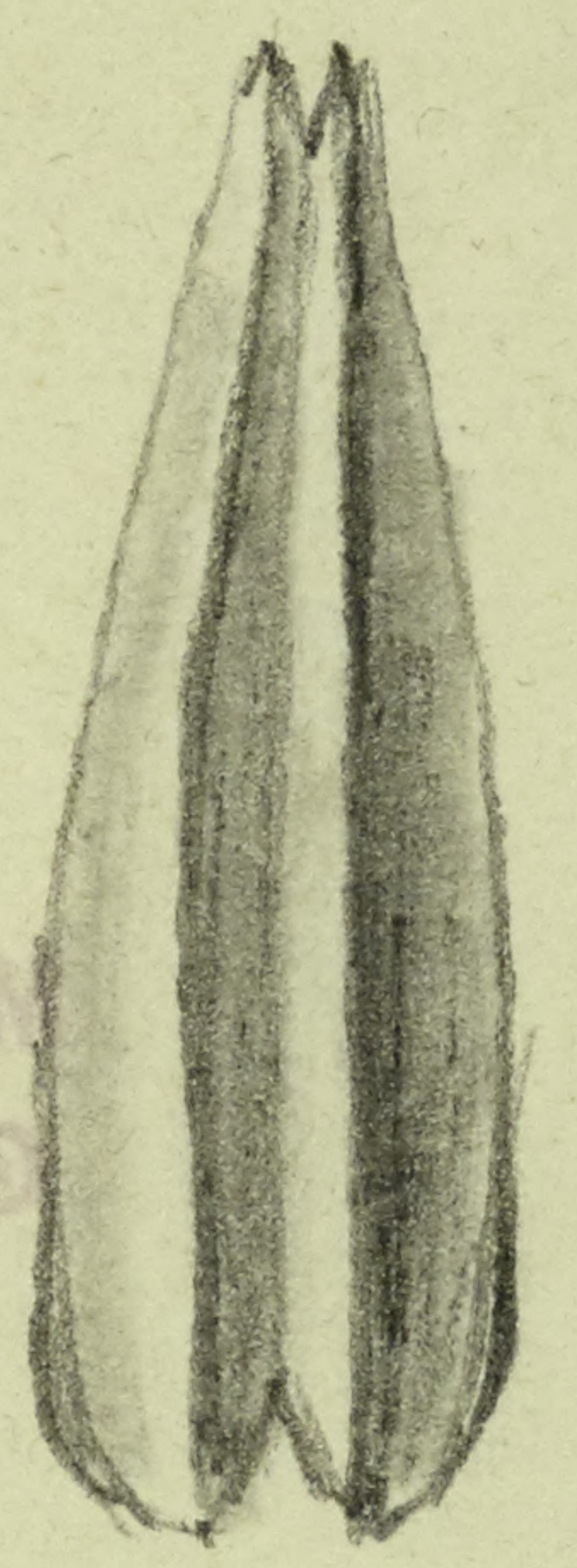


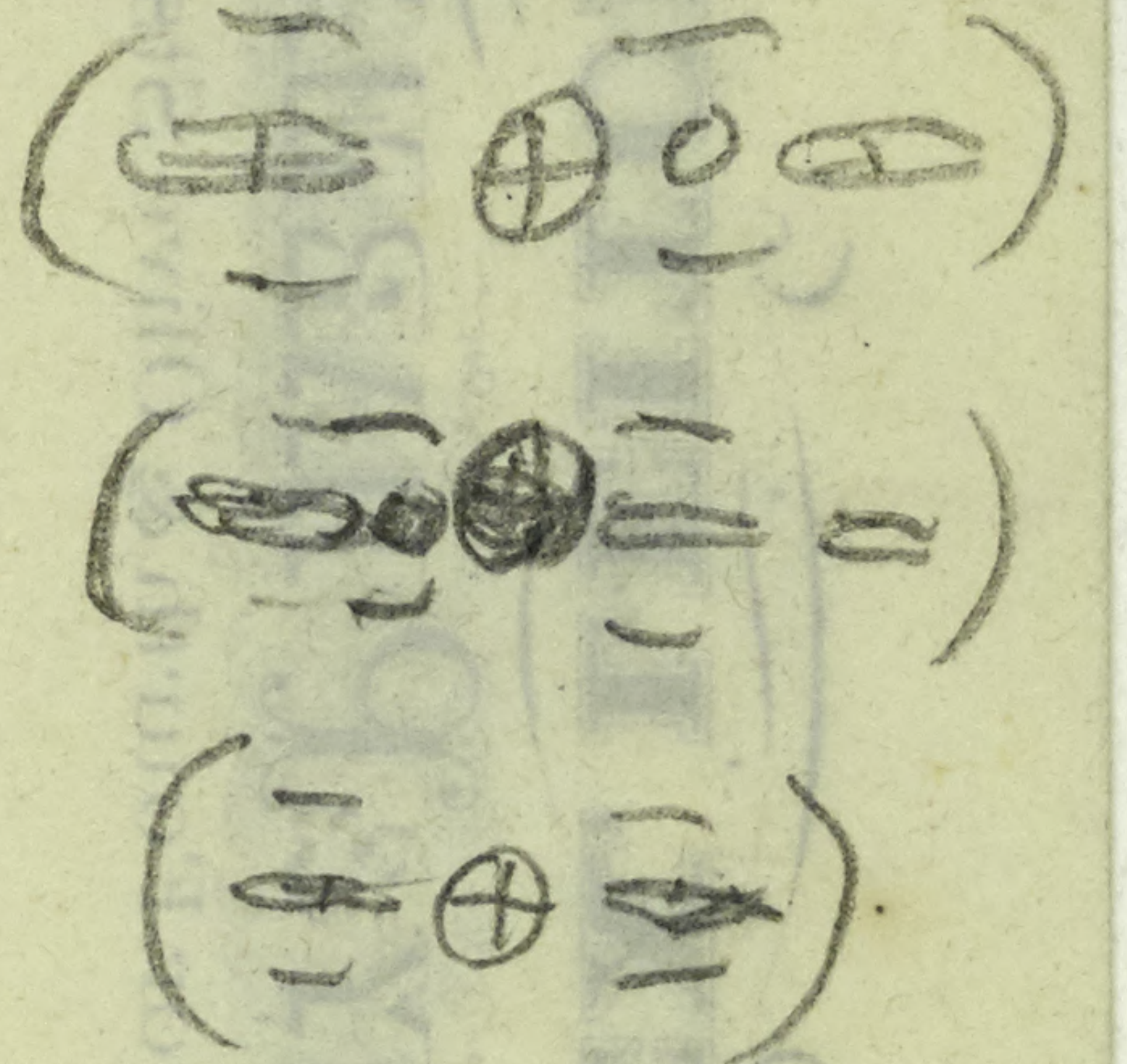
30 × 37 / 30 1,0 × 1,2



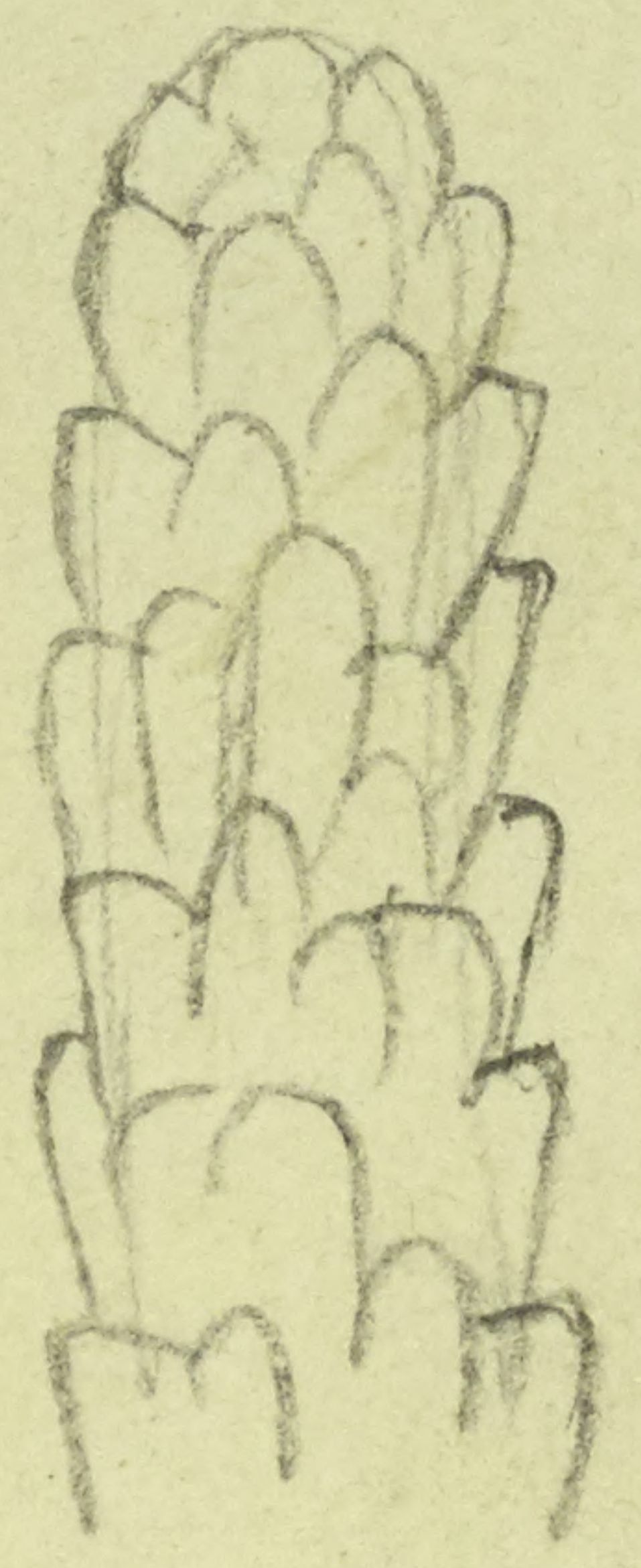
31 × 40 / 30 = 1.0 × 1.3

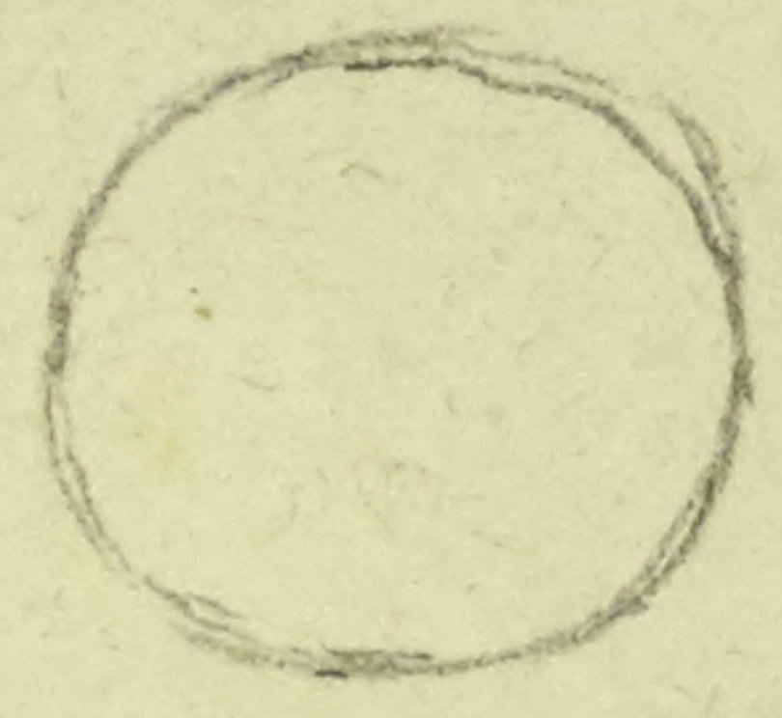
×30





Tip of Stigma ×150





Pollen × 415

11.5 × 10 / 415 = 0.027 × 0.024 mm

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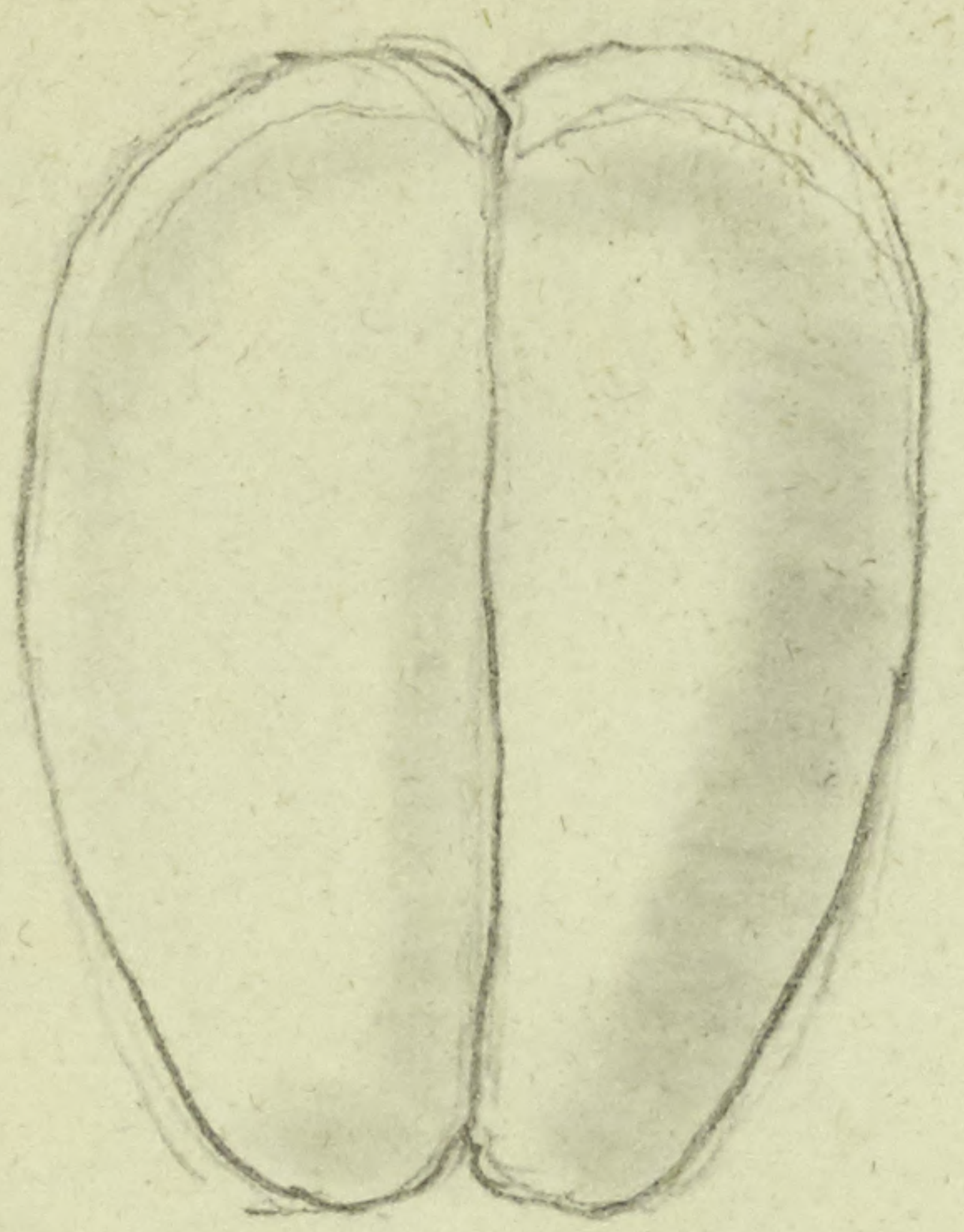
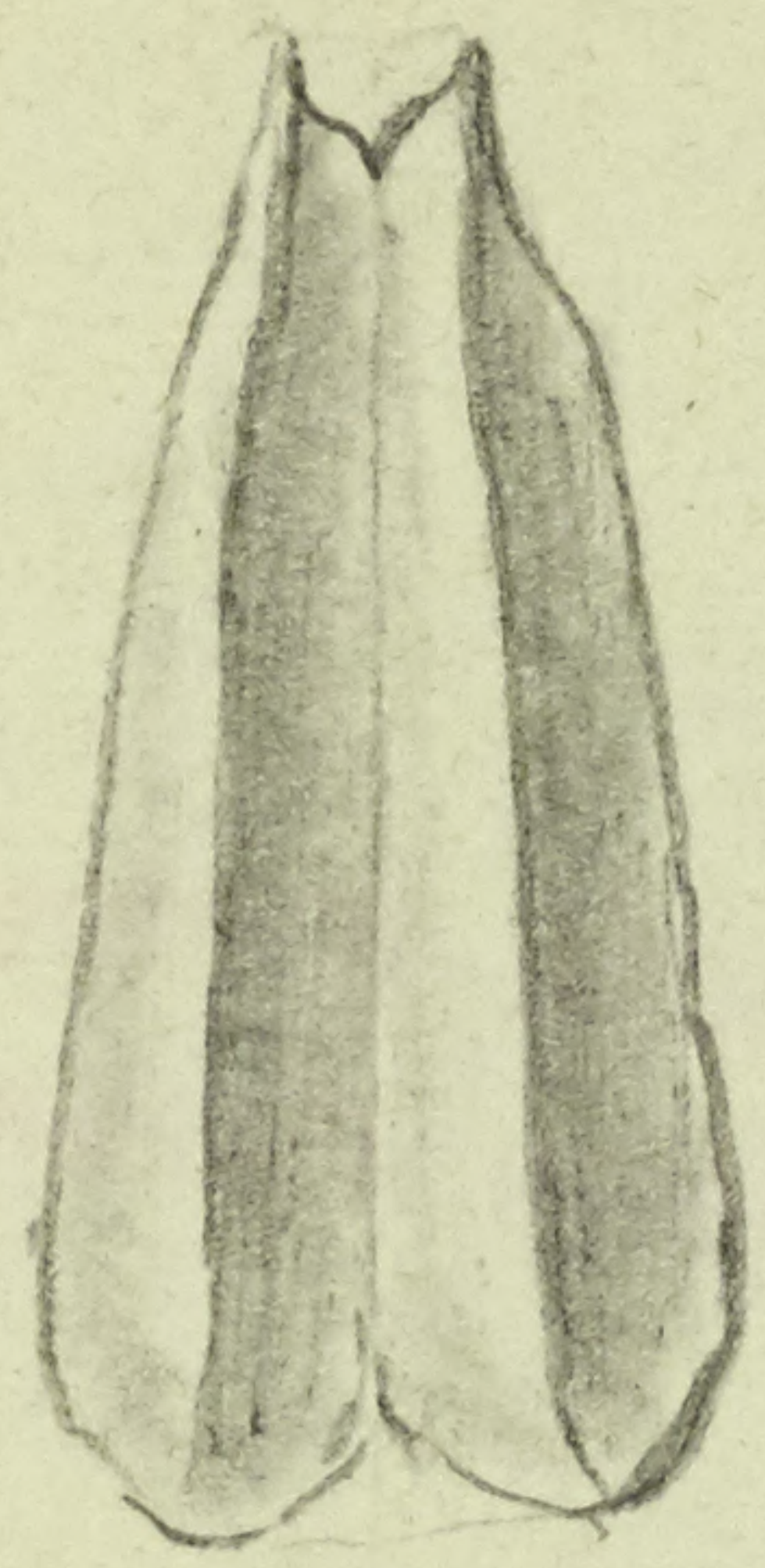
Callitriche verna Octob 15 1864

Quebec, Brunet

heterophylla

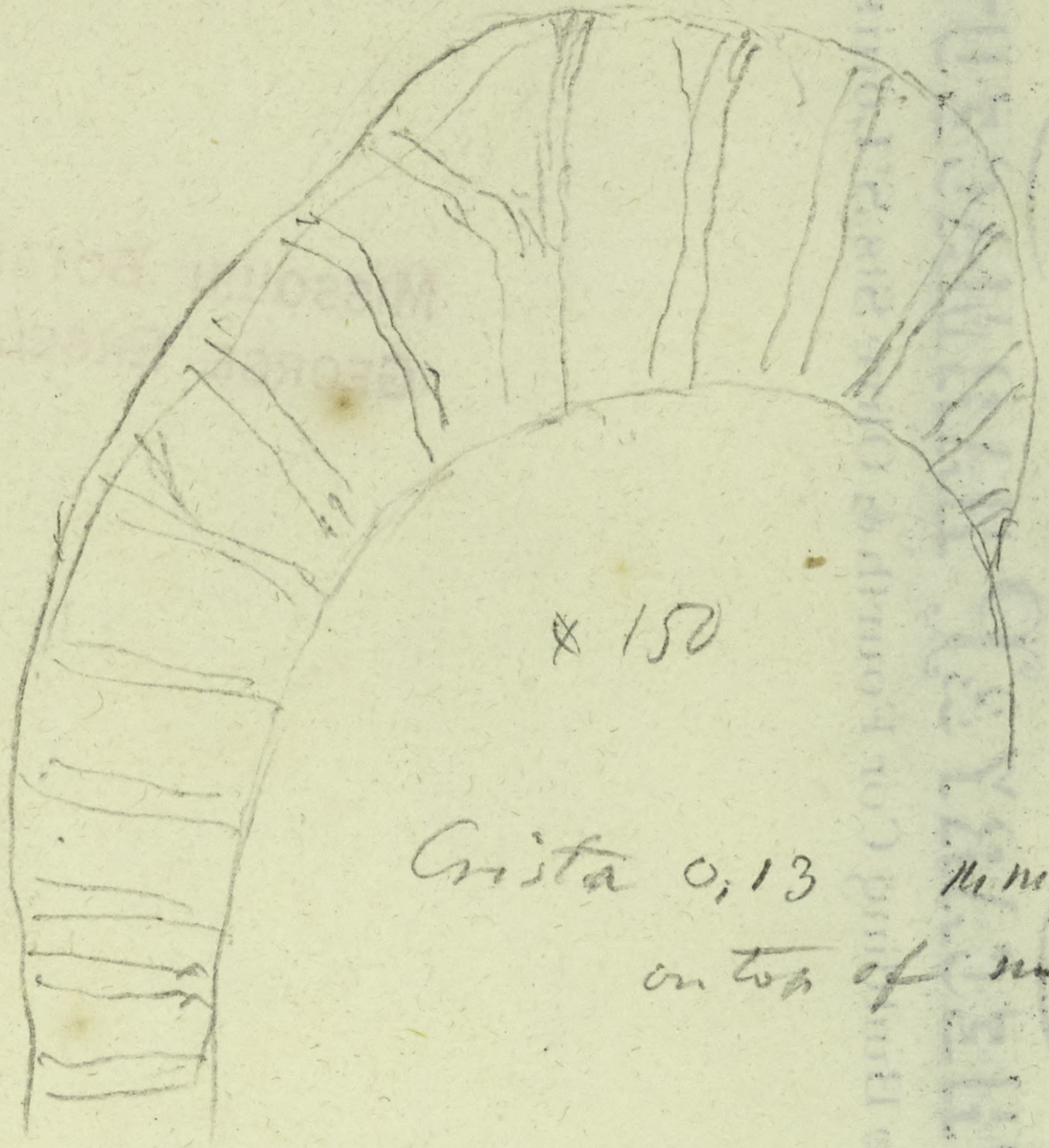
× 30





$\frac{24 \times 31}{30}$ = 0.8 × 1.0 mm

others 0.8 × 1.1 mm



× 150

Crista 0,13 mm broad on top of nutlet

900

$\frac{20}{150}$

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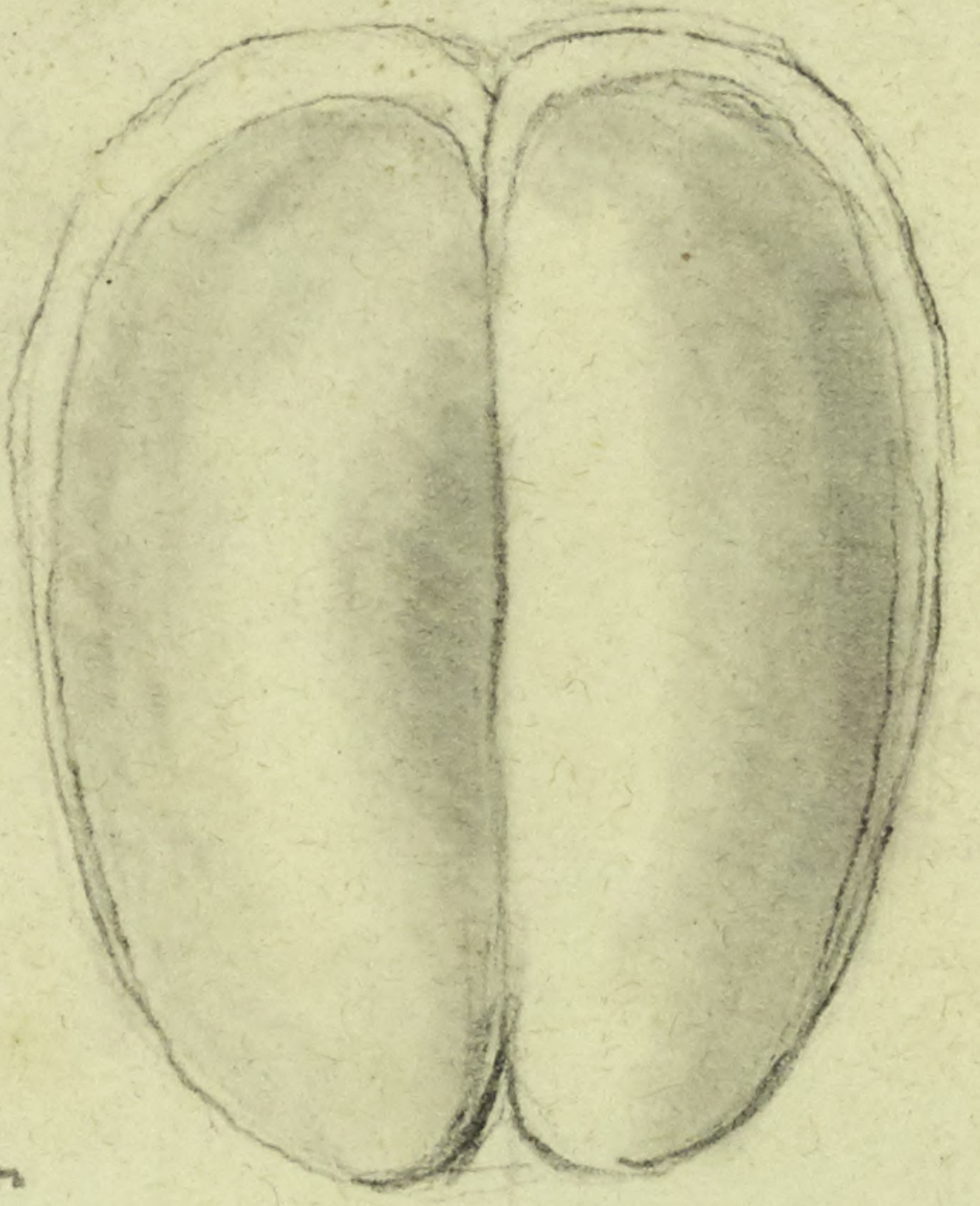
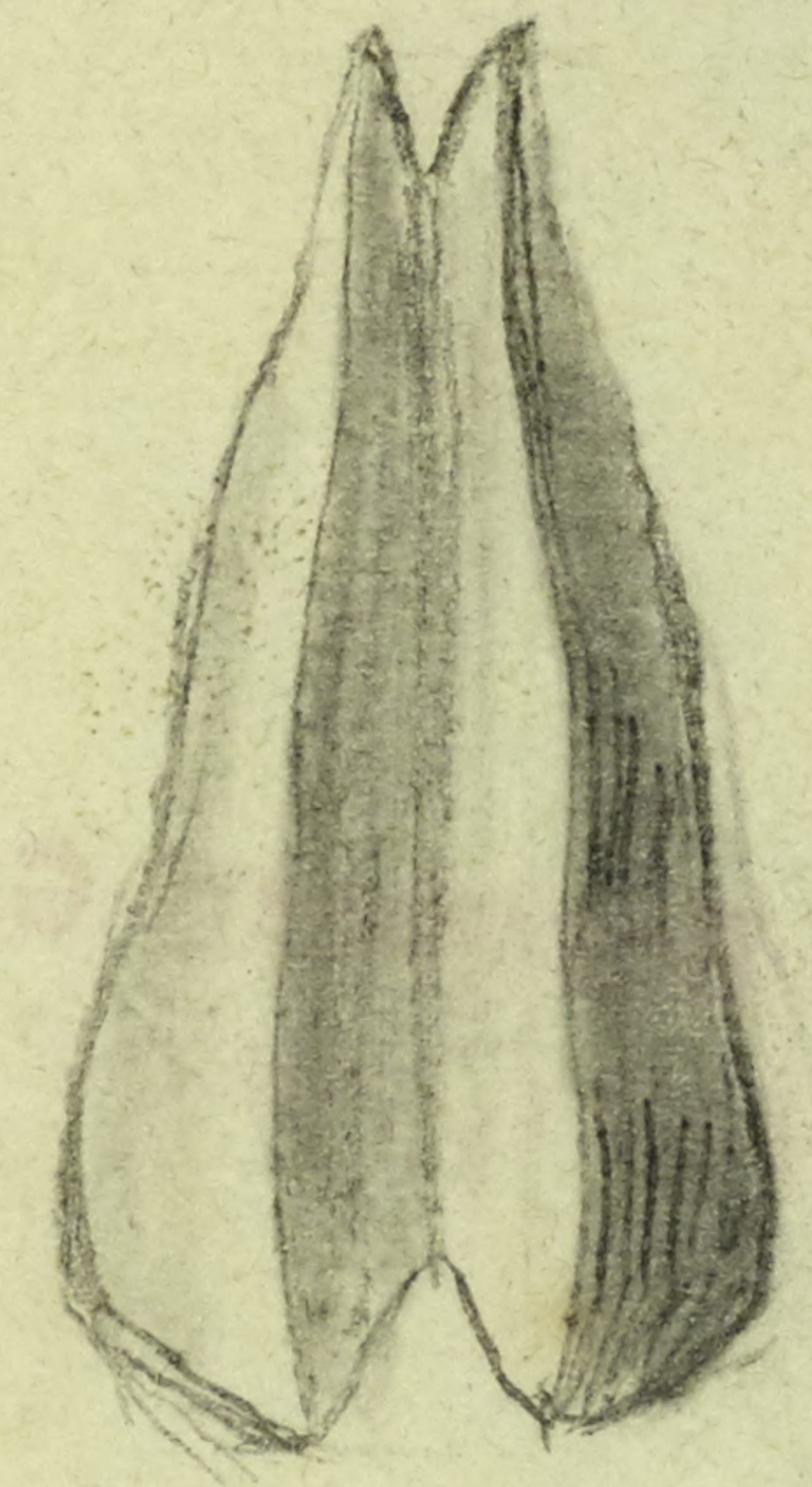
Call. verna Sept 25 1864

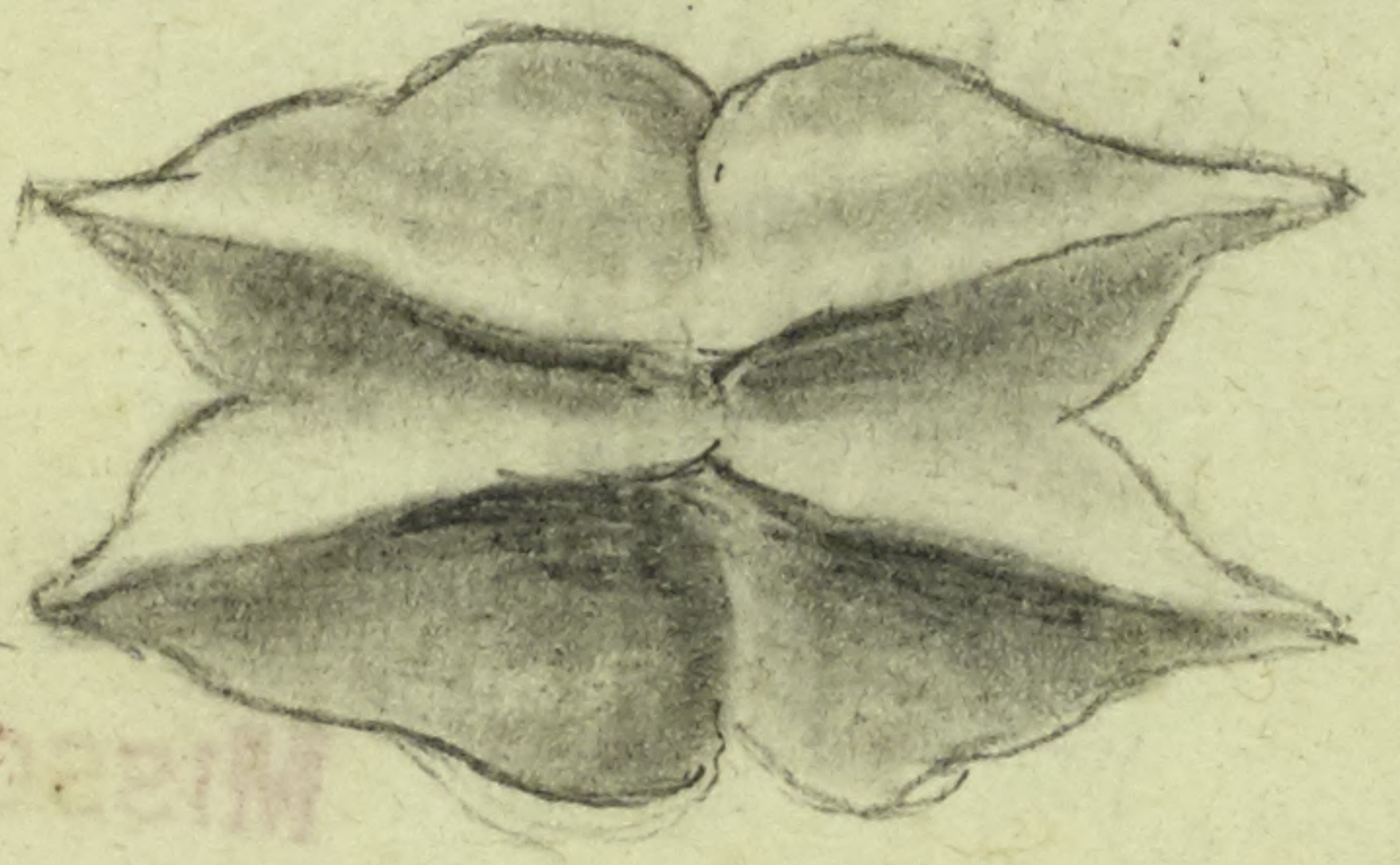
brevifolia Austin No. 1 Orange Co NY. 1864

901

x30

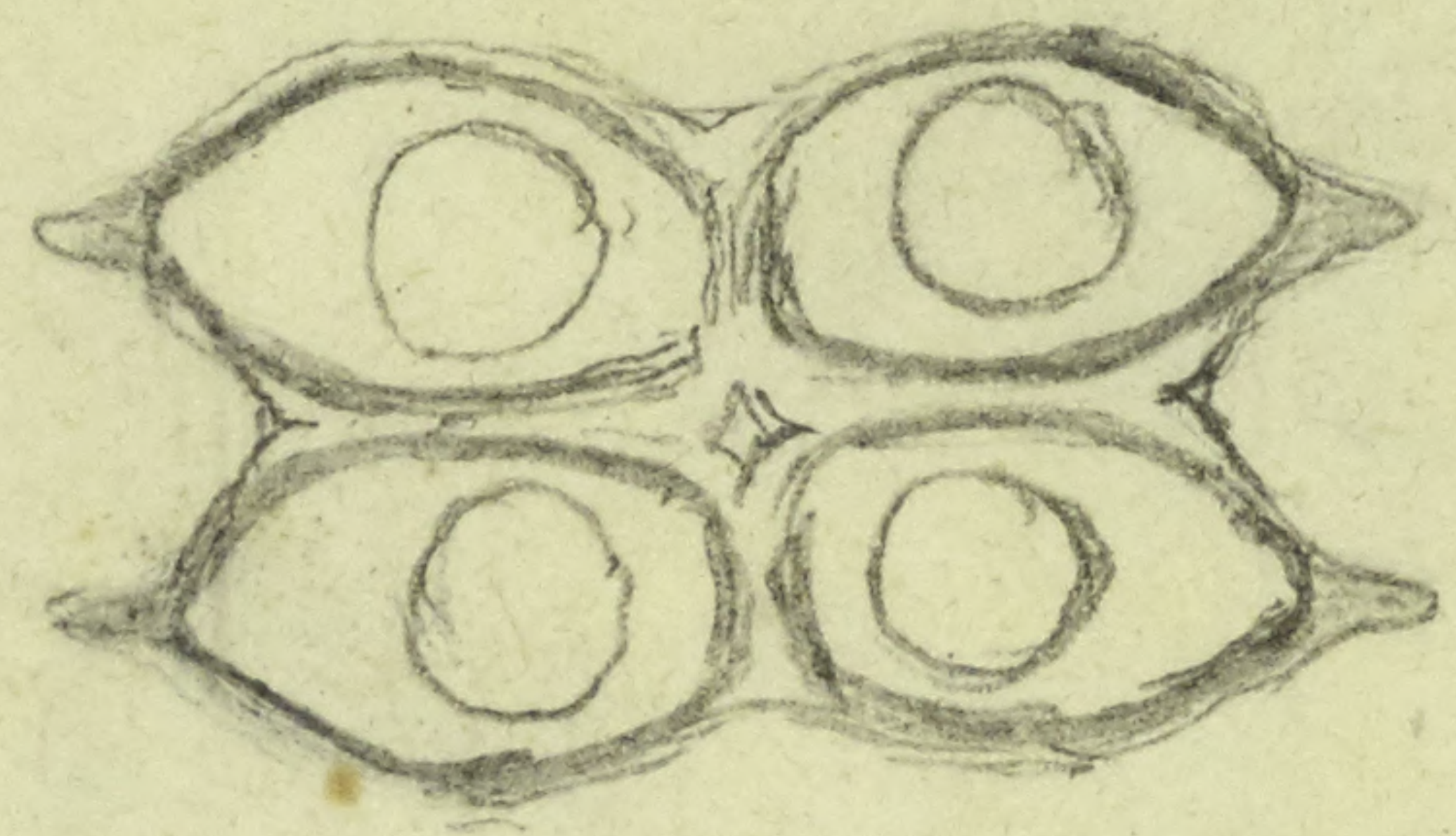




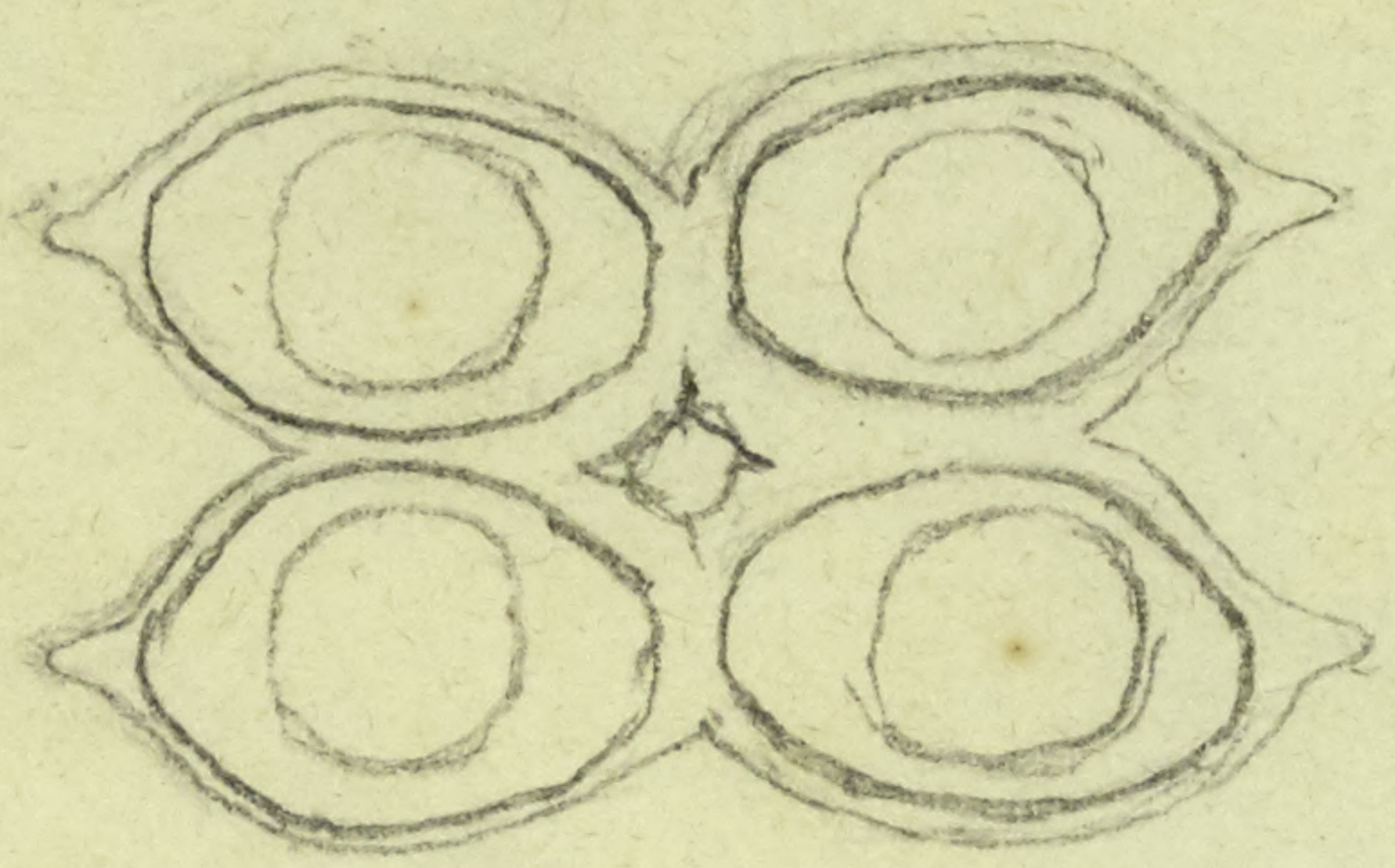


29 x 36 / 30 mm

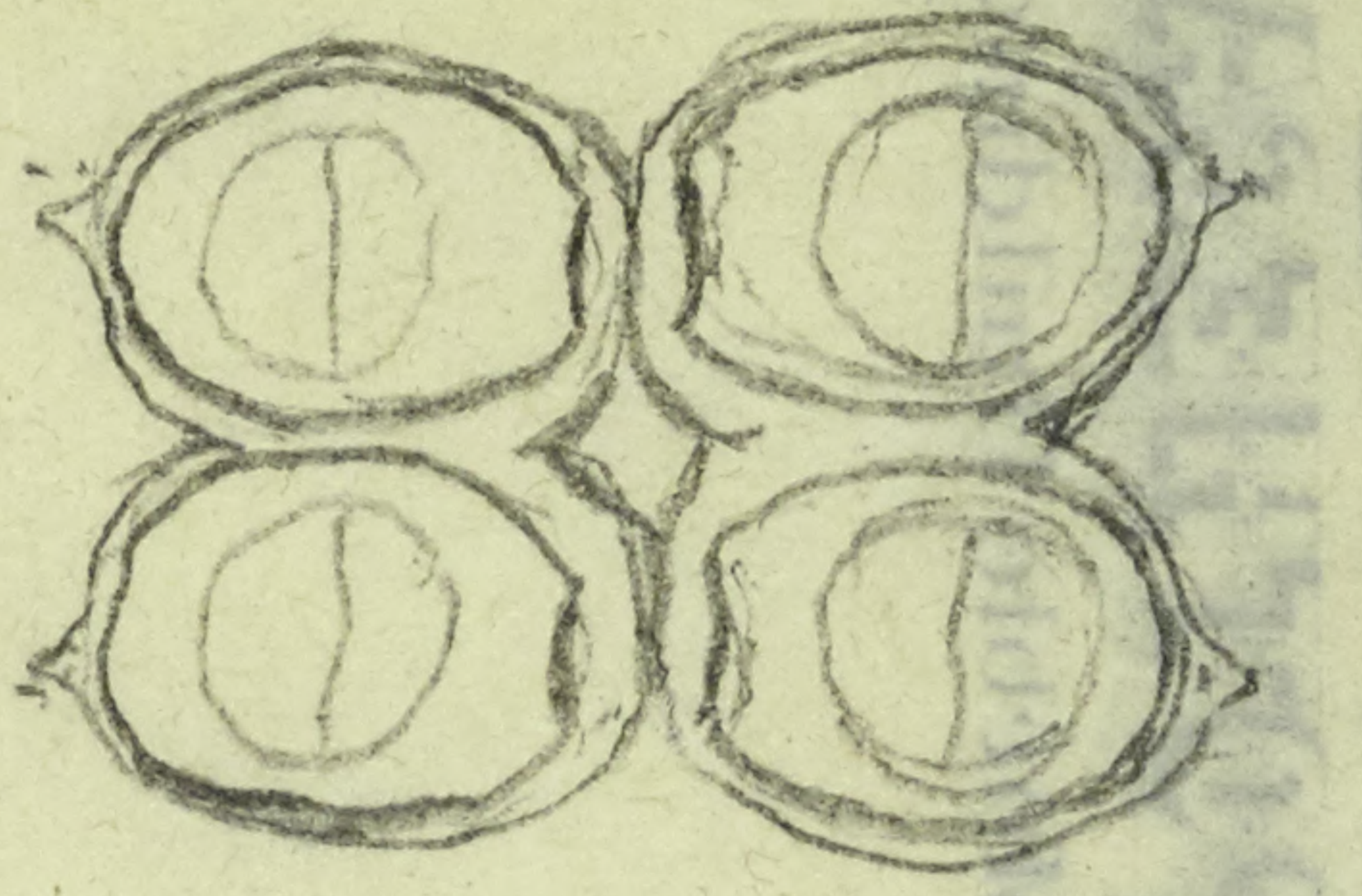
= 1.0 x 1.2 mm



upper



middle



lowest section

sections well soaked

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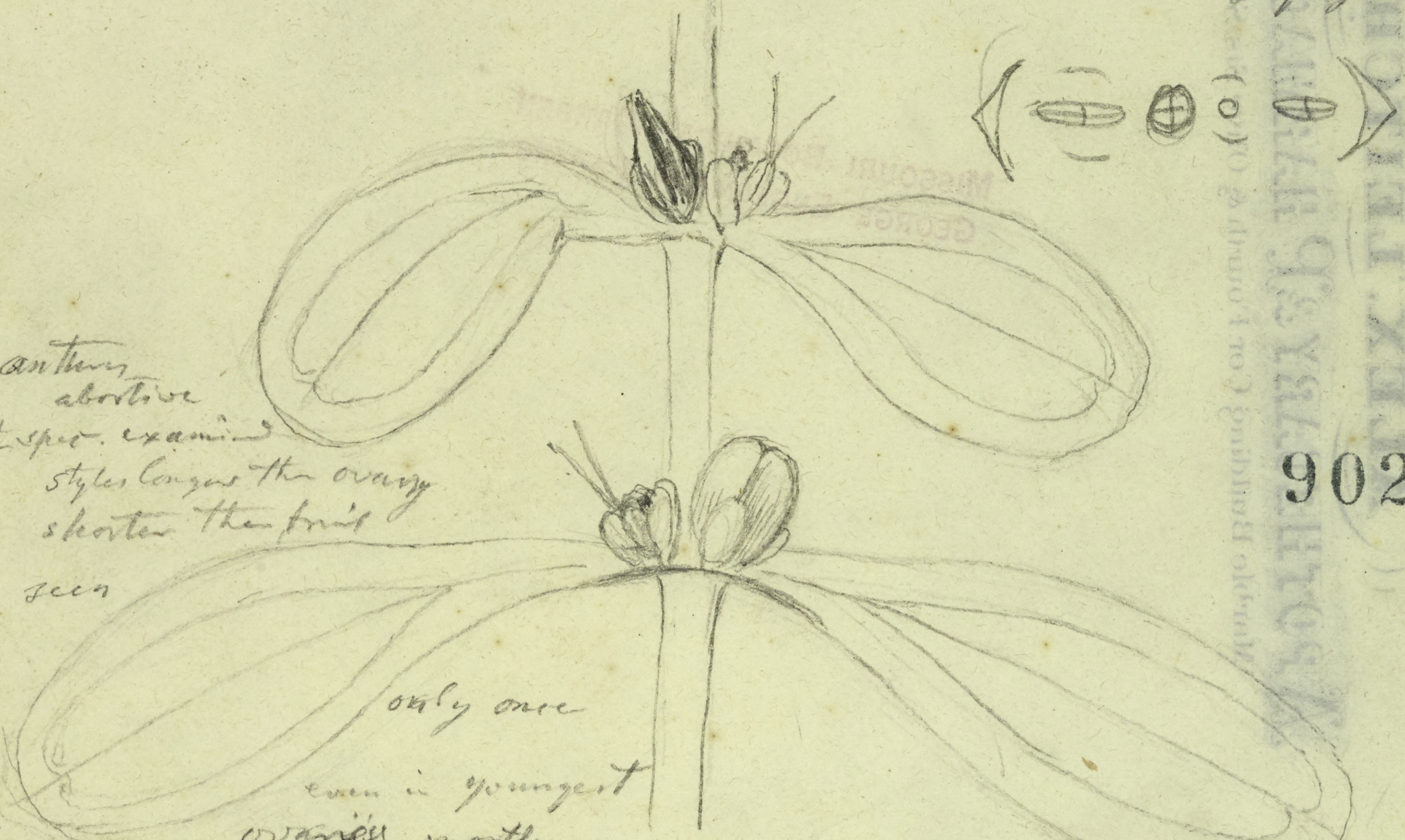
Cll. verna Sept 25 1864

Terrestris Austin No 1 Orange Co N.Y. 1864

bracts deciduous
styles very fugacious



all anthers abortive
in the spec. examined
styles longer than ovary
shorter than fruit
seen

only one
even in youngest
ovaries mostly
destroyed or never present?

902

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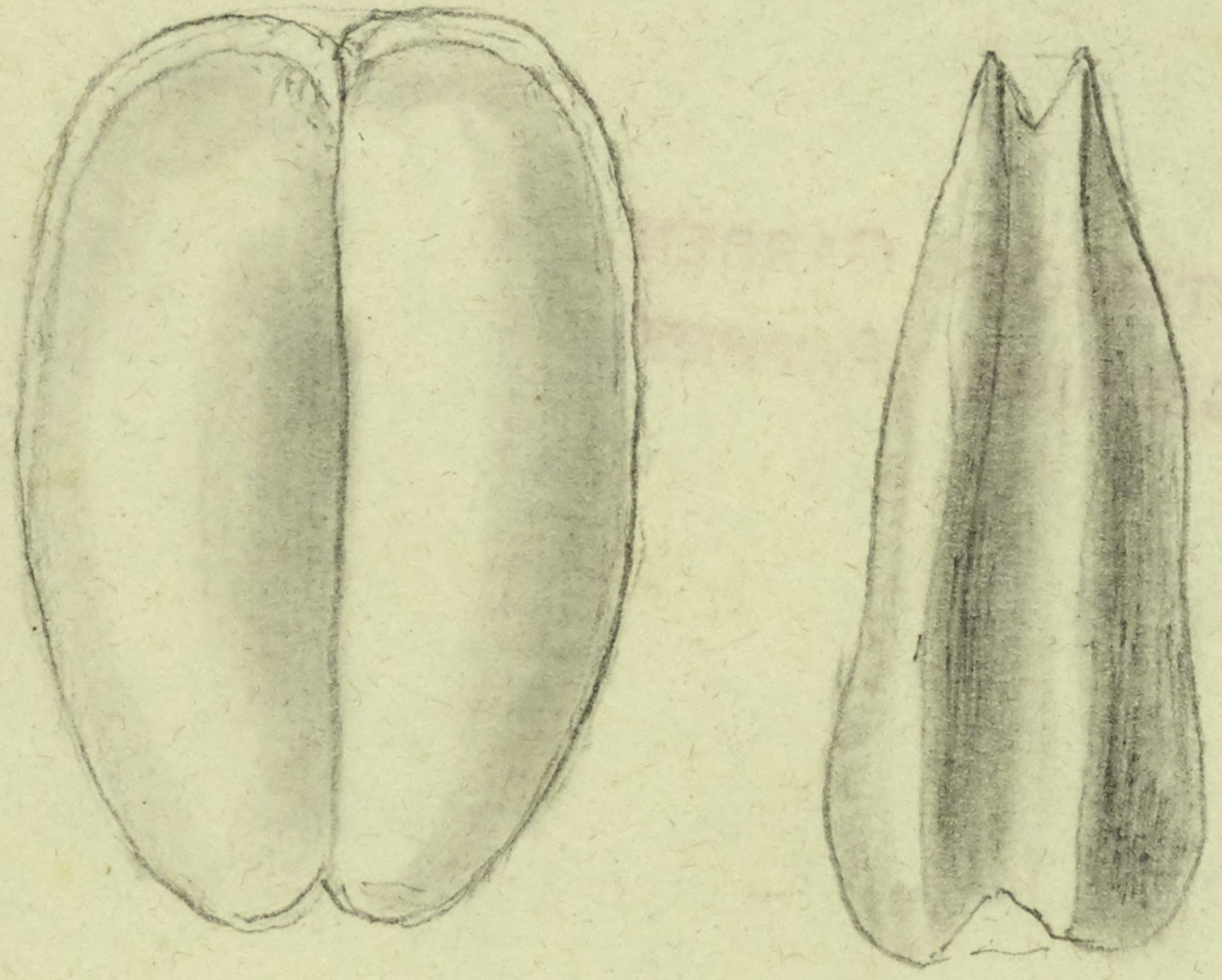
Callitriche verna Sept 29 1864

from heterophylla Lake Superior Loring

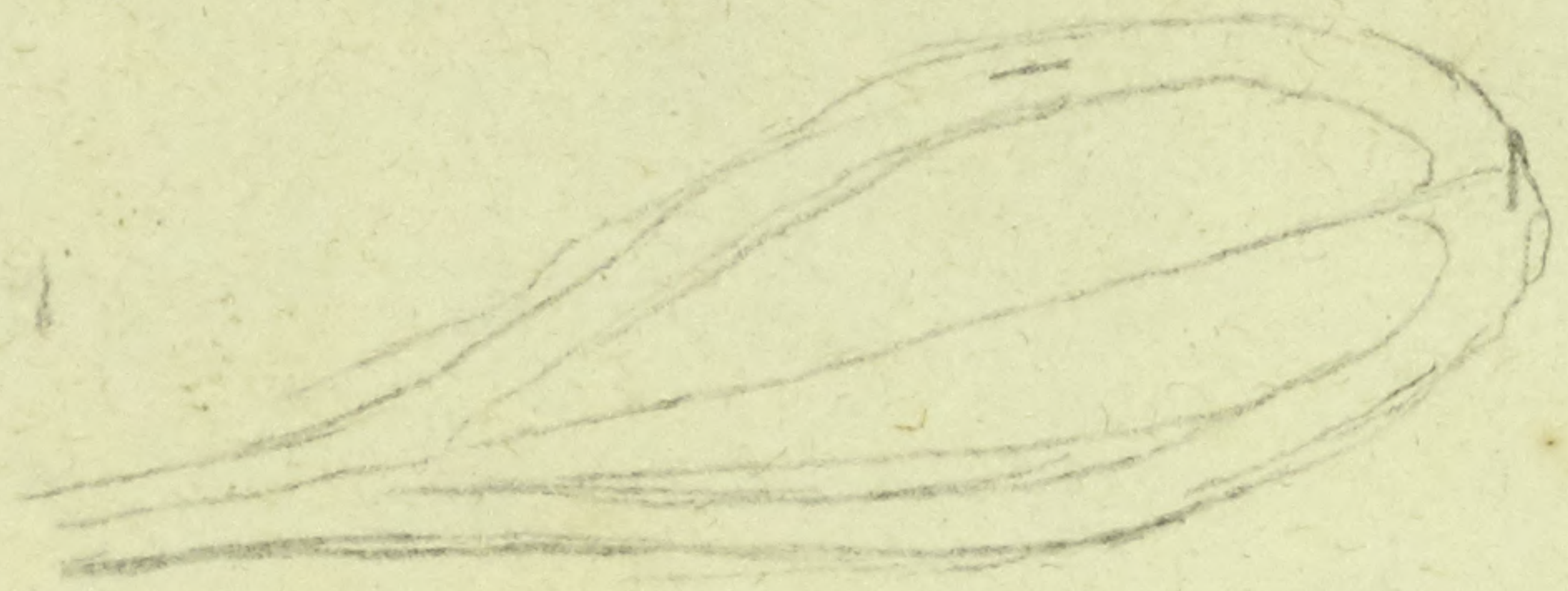
in Hb. Gray

$$\frac{25 \times 37 \text{ mm}}{30} = 0.8 \times 1.2 \text{ mm}$$



×30

903



×10

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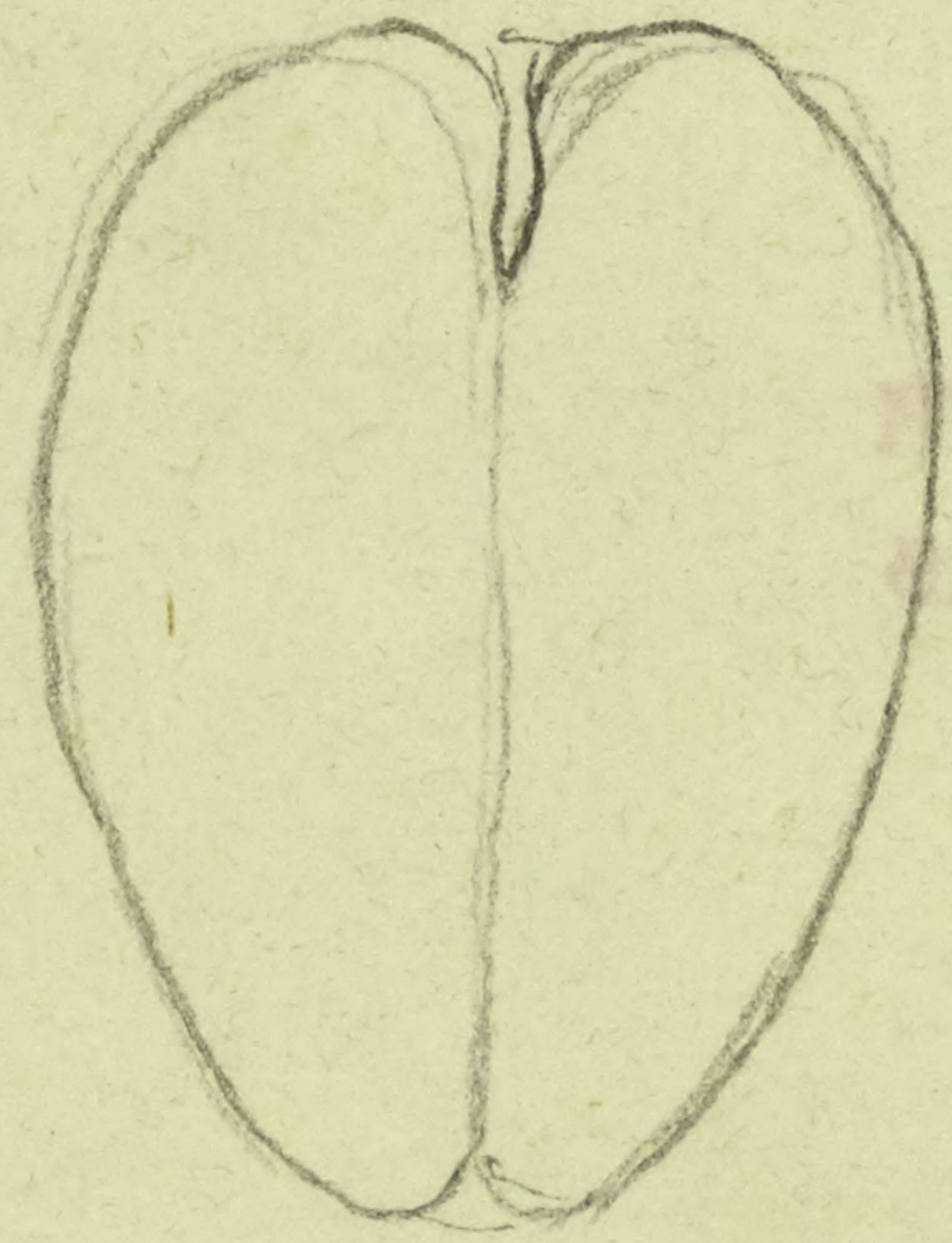
Callitriche Oct 8 1864

(Eaton Connecticut ♀) Herb. Gray

forma heterophylla

x30



$$\frac{24 \times 32}{30} = 0.8-1.1$$

904

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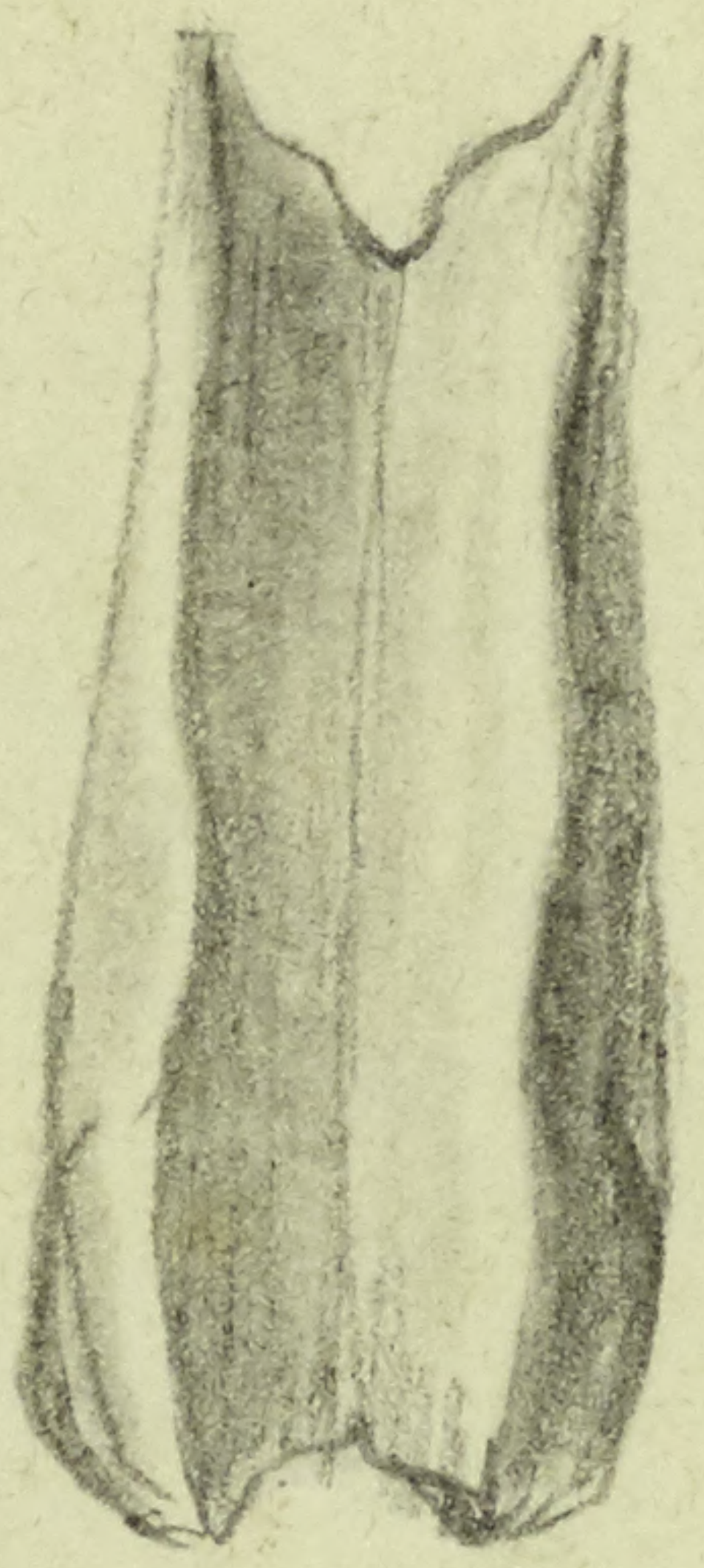
Callitriche verna, forma terrestris

Oct. 31 1864

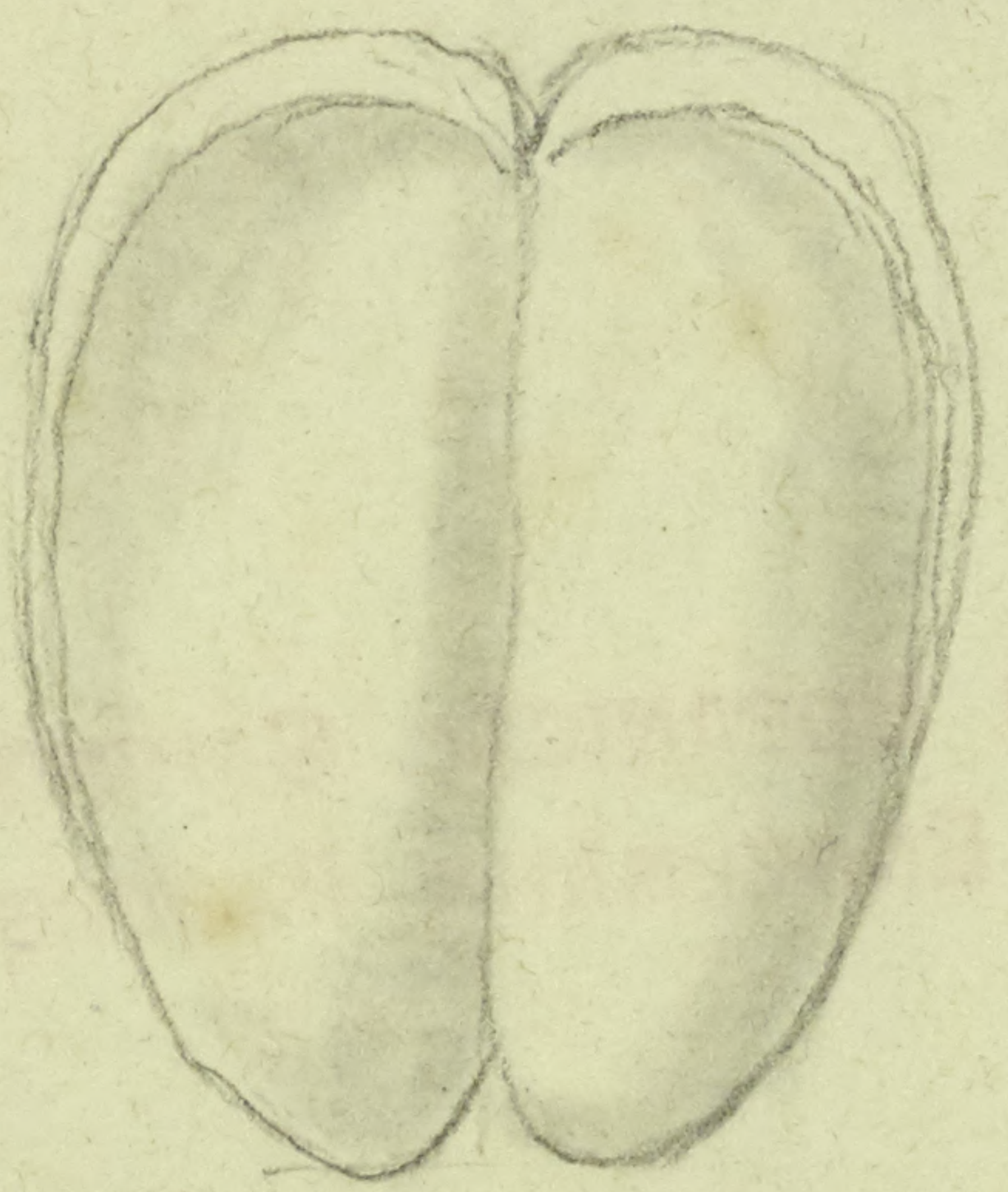
Delaware Mountain Gap; Sept 25

ex J. Collins' Herb
(Acad Philad.)

fruits flat
distance between keels
broad



0.9 x 1.1 mm



wings broad

905

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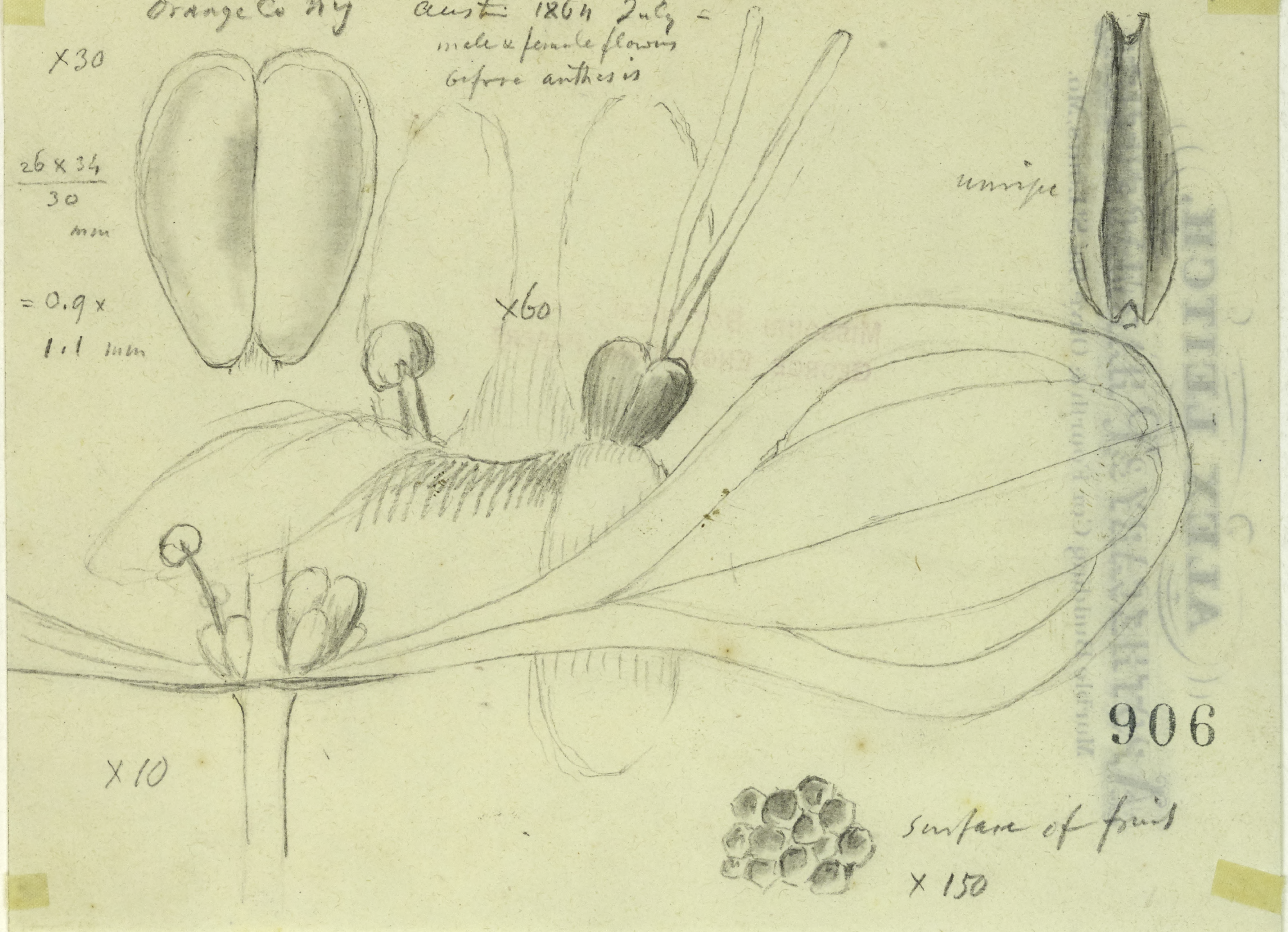
Call. verna aquatica
Orange Co NY   Austin 1864 July = male & female flowers before anthesis

Sept 25   1864


x30
26 x 34
30
mm
= 0.9 x
1.1 mm
x60
unripe
x10
surface of fruit
x 150

906

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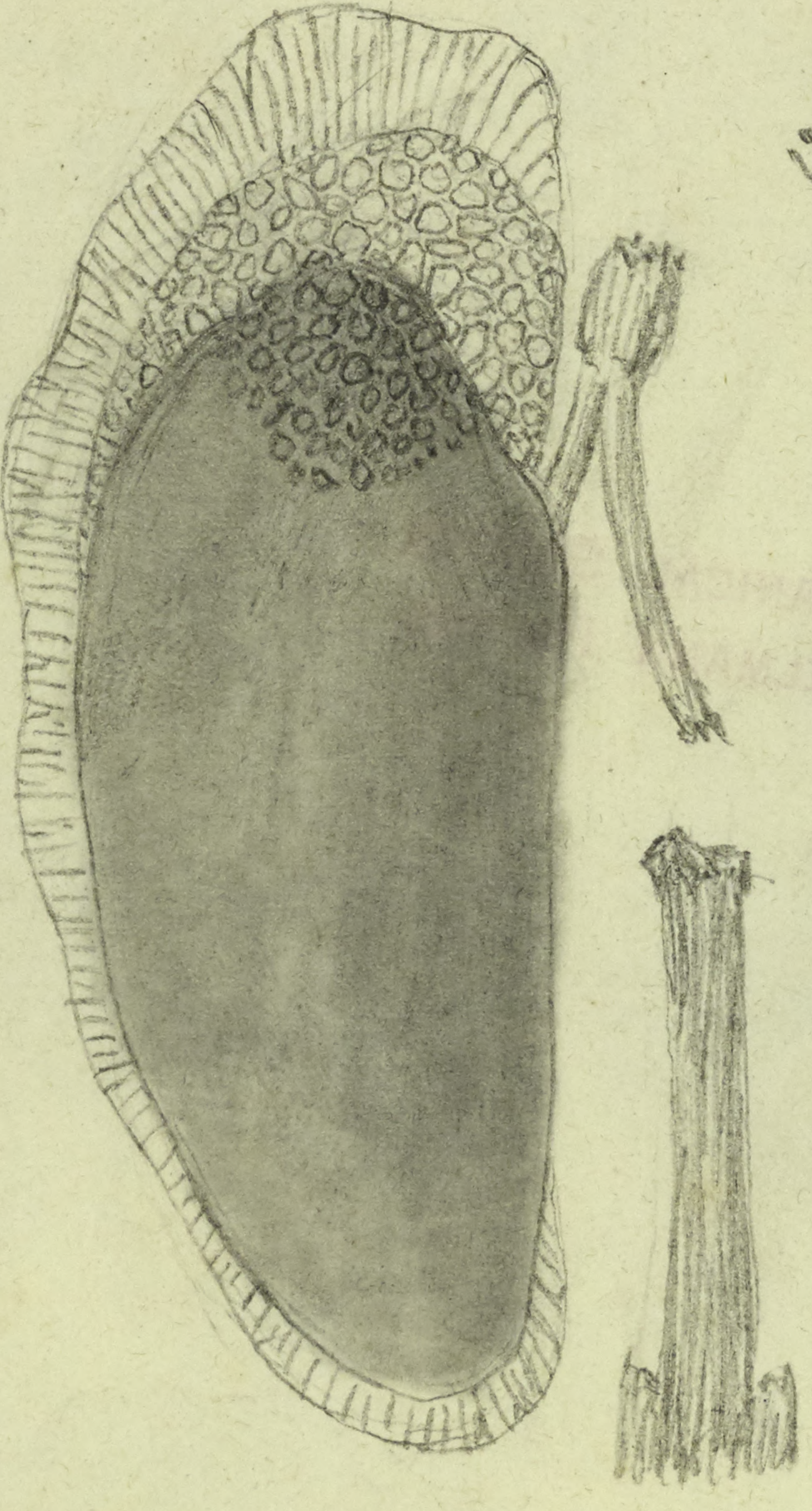
Call. verna Sept 25 1864

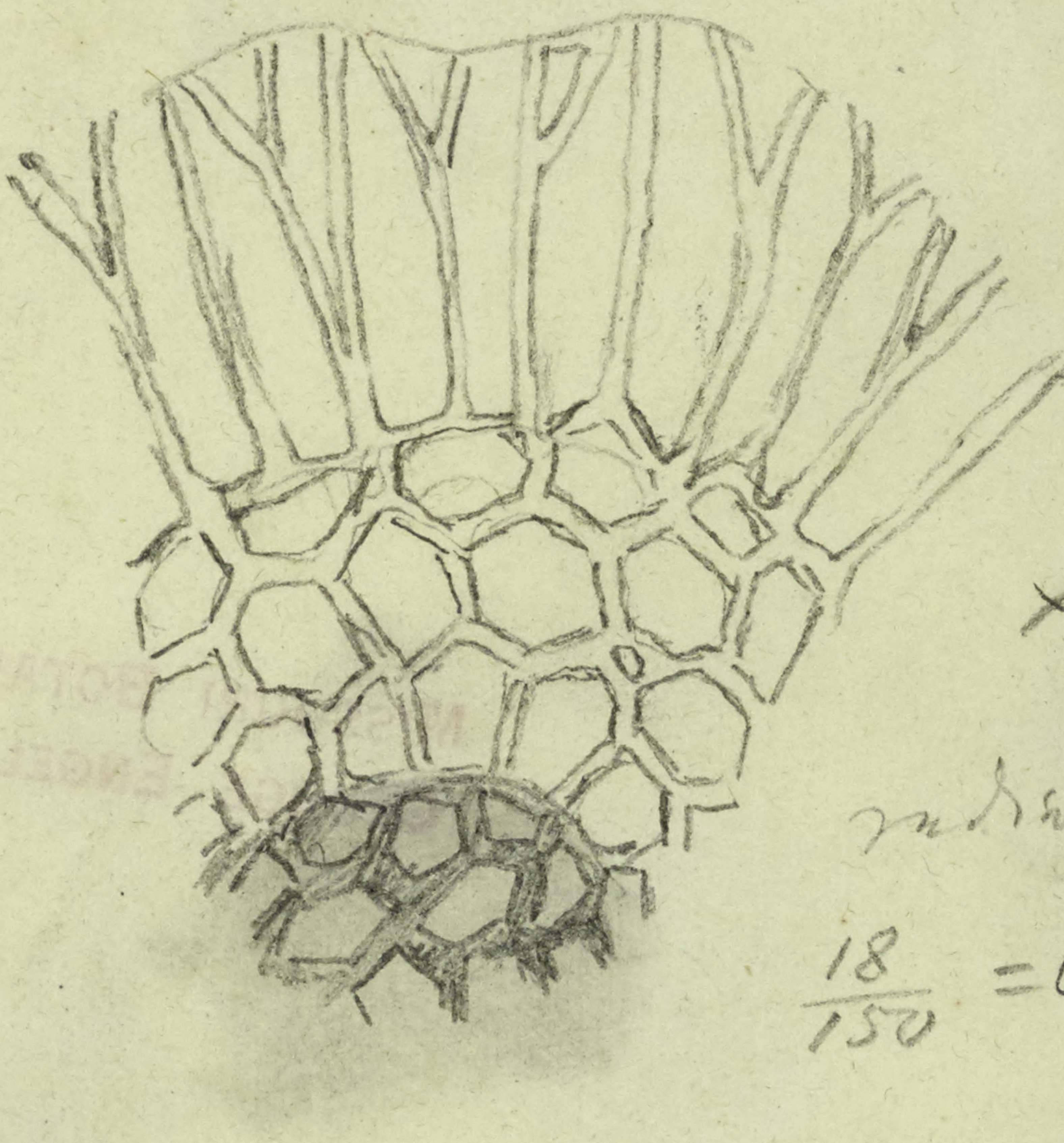
terrestris Orange Co, Austin July 1864

No 1

x60



Carpophor



907

x 150

radiated Carina

$\frac{18}{150} = 0.12$ mm broad

Wing unusually broad and very distinctly radiated

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0 1 2 3 4 5 6 7 8 9 10
cm
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MISSOURI BOTANICAL GARDEN

Sept 27 1864

Callitriche verna macrophylla, aquatica
Fairfield, Hadley in Hb A Gray

Sept 27 1864

0 1 2 3 4 5 6 7 8 9 10
cm copyright reserved
Missouri
Botanical
Garden

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908

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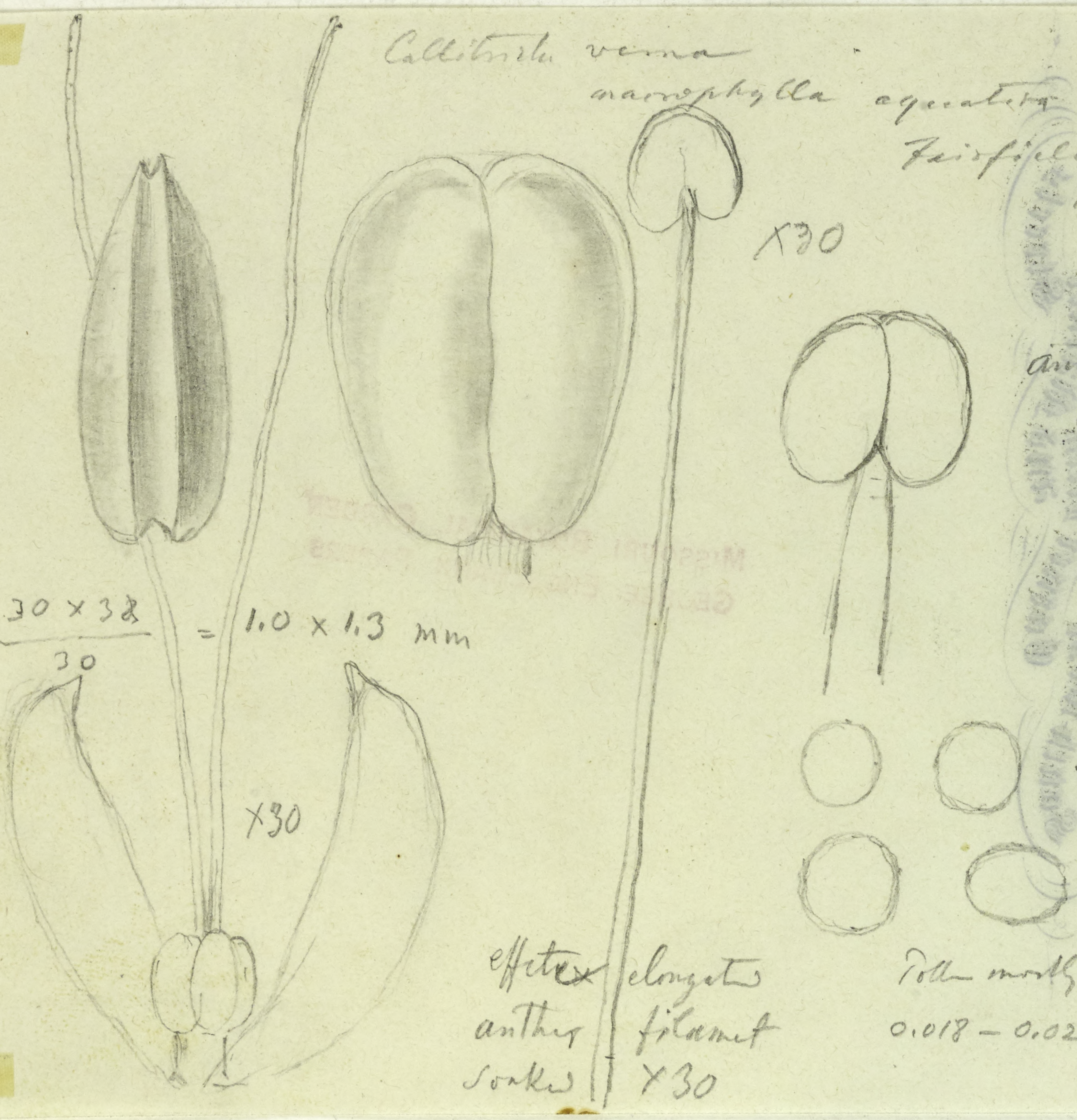
Sept 27 1864

Callitriche verna

macrophylla aquatica

Fairfield

Hadley in Hb gr.


×30
anther unopened of same plant ×30
$\frac{30 \times 32}{30}$ = 1.0 × 1.3 mm
×30
effete anther soaked
elongated filament ×30
×415
= 0.018 × 0.022 mm – both diam

Pollen mostly globose 0.018 – 0.022 ÷ diam mm

909

0 1 2 3 4 5 6 7 8 9 10
cm
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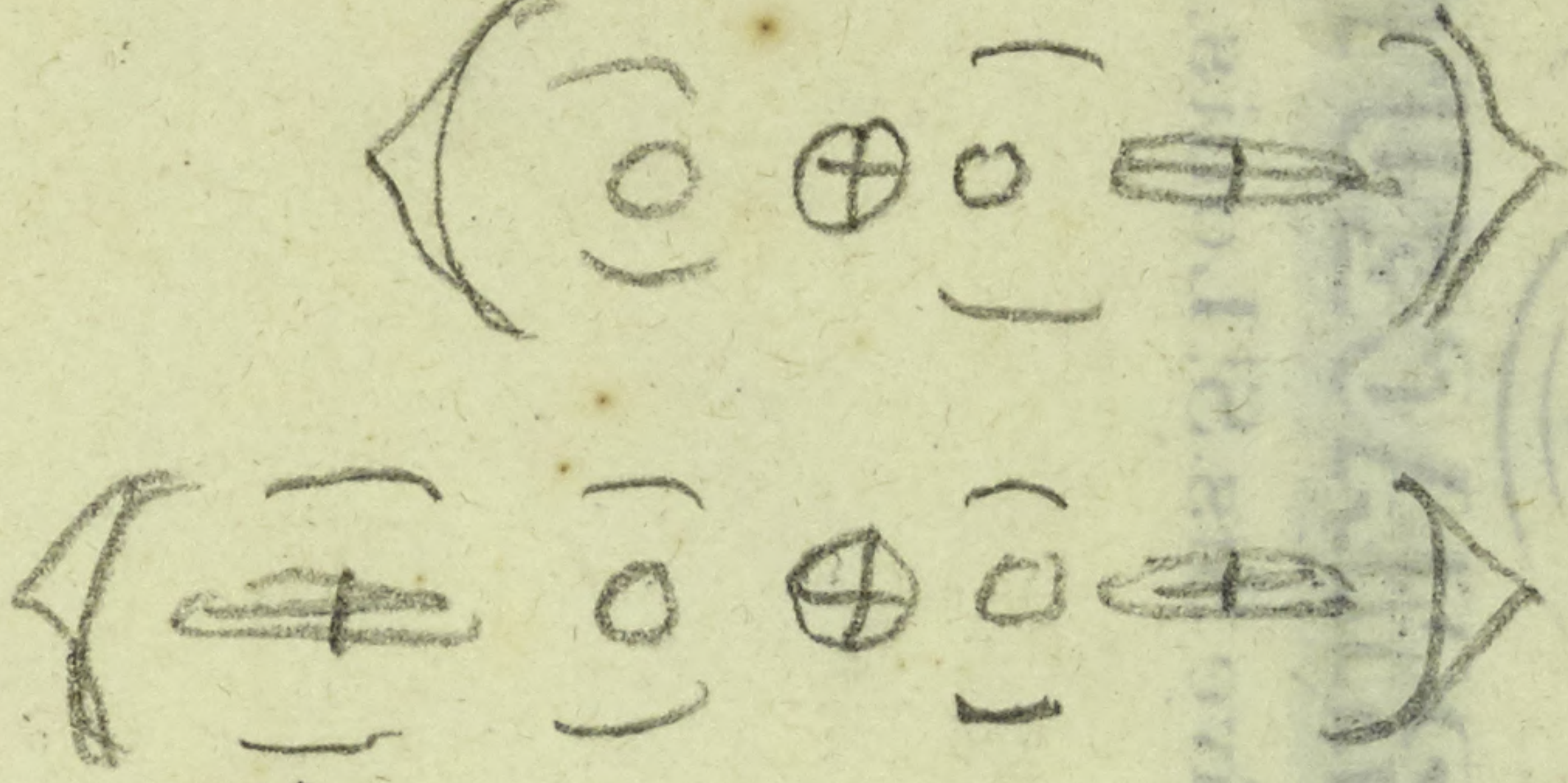
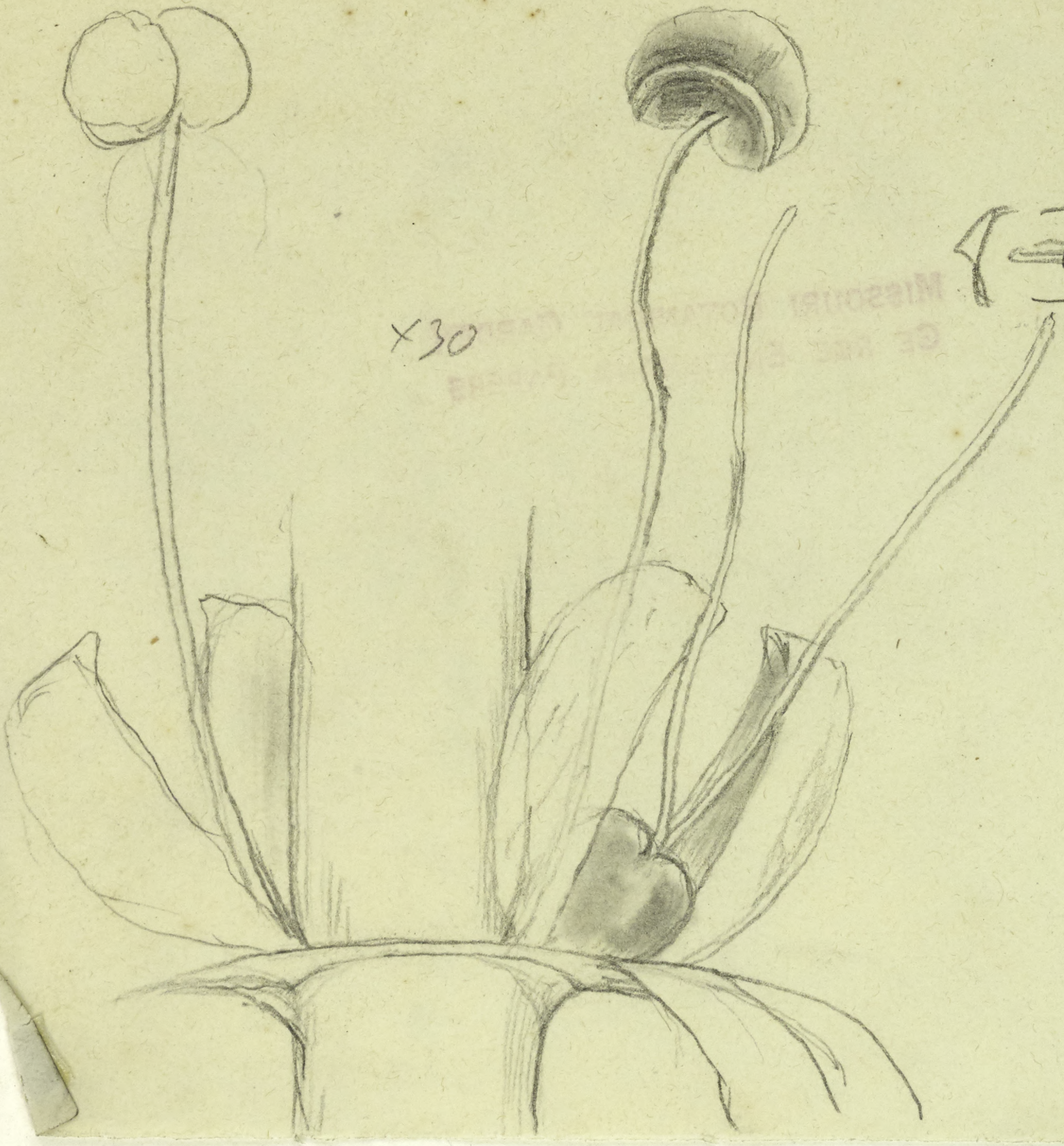
MISSOURI BOTANICAL GARDEN

Leitch & Corlies
DRUGGISTS
South-west Corner Fifth and Market Streets

Call. verna Sept 29 186

Cattaraugus Co N.Y. 186





910

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APOTHECARY & PHARMACEUTIST,
Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

0 1 2 3 4 5 6 7 8 9 10
cm
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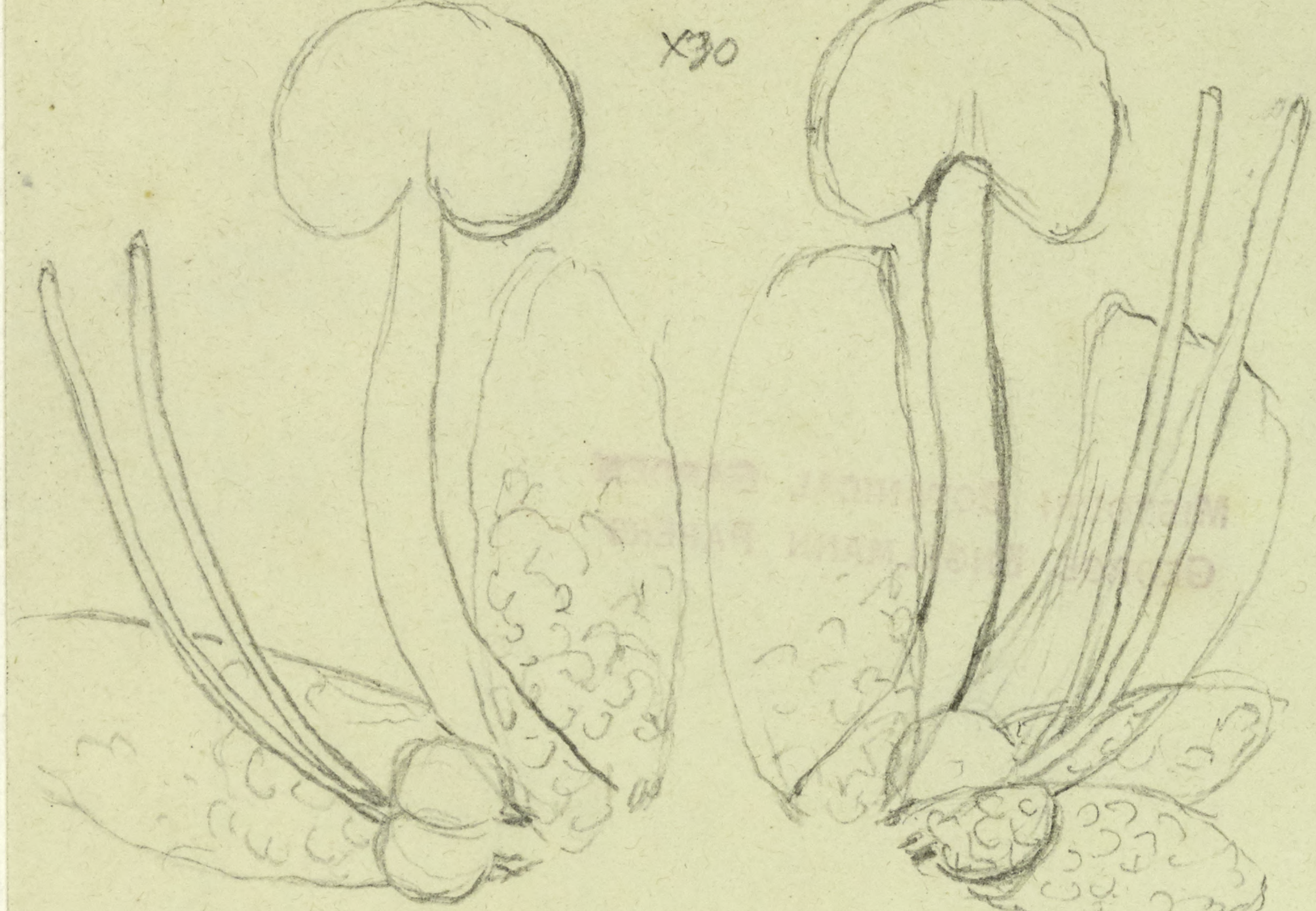
MISSOURI
BOTANICAL
GARDEN

C. verna

Sept 29. 1864

Cattaraugus Co NY.



911

4 bracts, the outer pair at base of fem. flower smaller — rare

male flower just open
females still unopened

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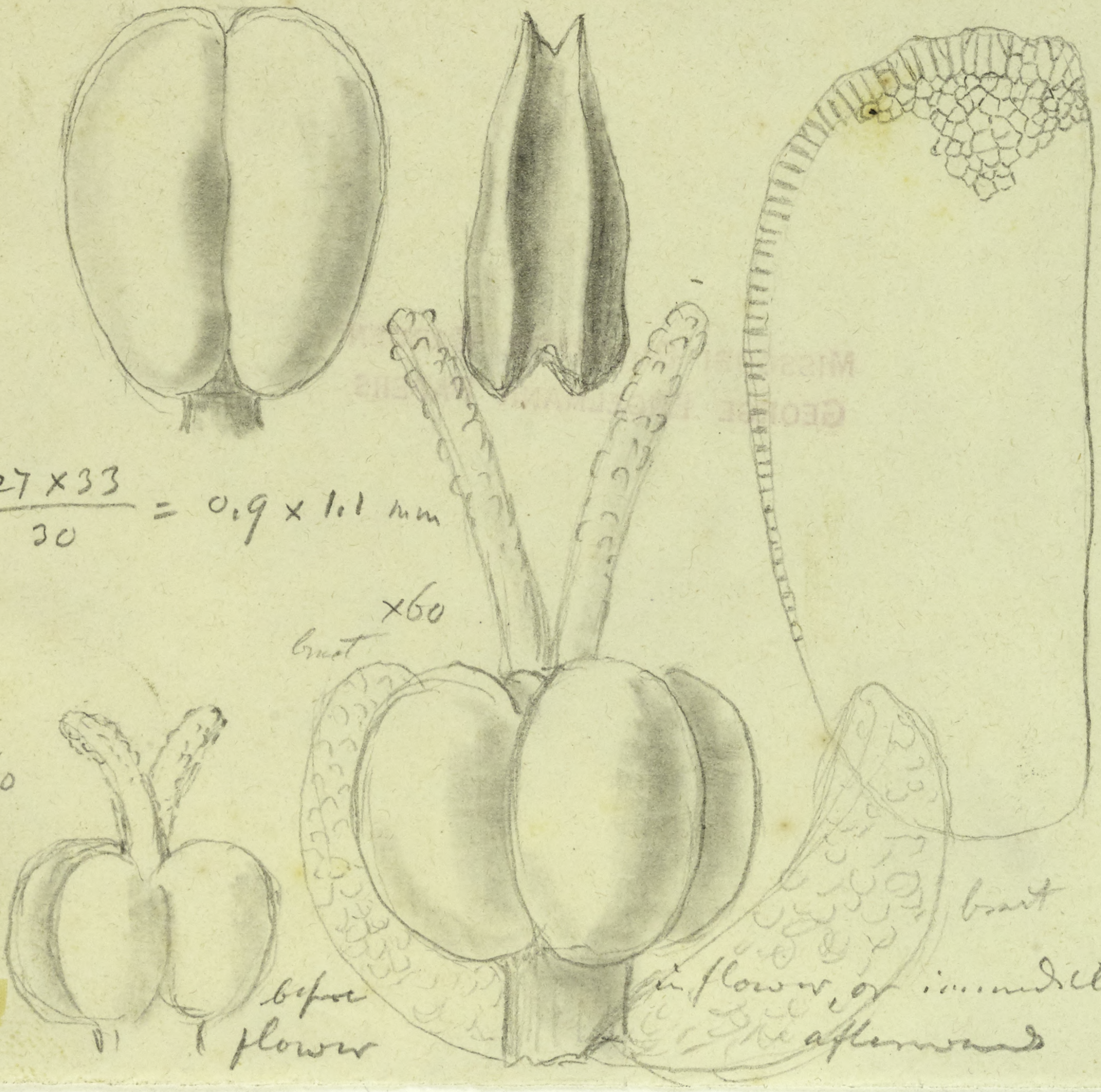
Sept 27 1864

Callitriche verna

Rocky Mountains, Colorado Terr

E. Hall 1862


×80
×60
bract
×60
bract
before flower
in flower, or immediately afterwards
×60

$$\frac{27 \times 33}{30} = 0.9 \times 1.1 \text{ mm}$$

crista very narrow only $\frac{3}{60} = 0.05$ mm broad on widest part

912

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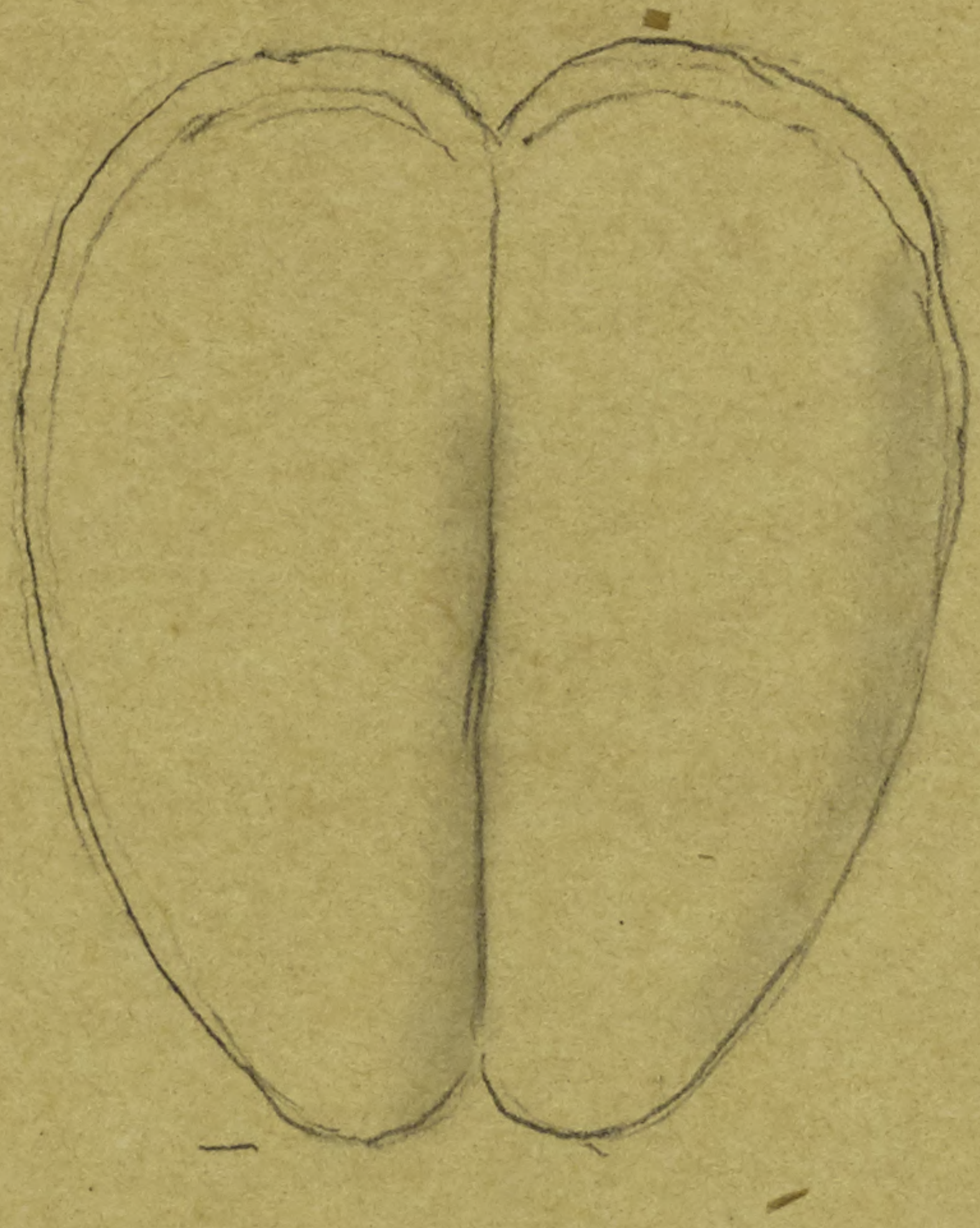
Call. verna heterophylla

Nov 9 1864

New Brunswick

Rev James Fowler

Oct. 8 1864



lower submerged leaves 18–26 mm. long
floating leaves 3–5 mm broad

$\frac{33 \times 38}{30} = 1.1 \times 1.3$ mm

913

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APOTHECARY & CHEMIST,

Cor. 4th. & Olive Sts., St. Louis.

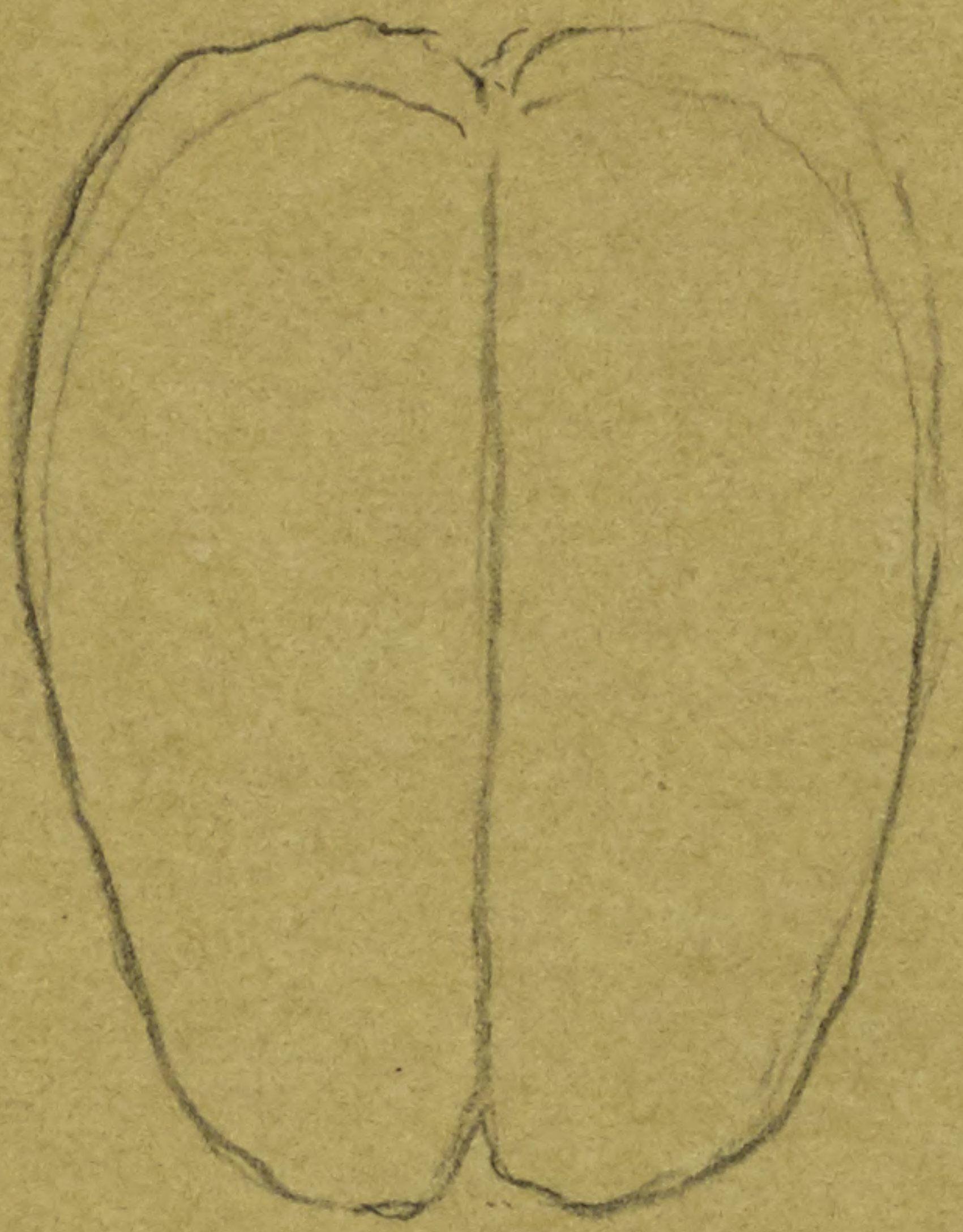
5.0 / 100

3

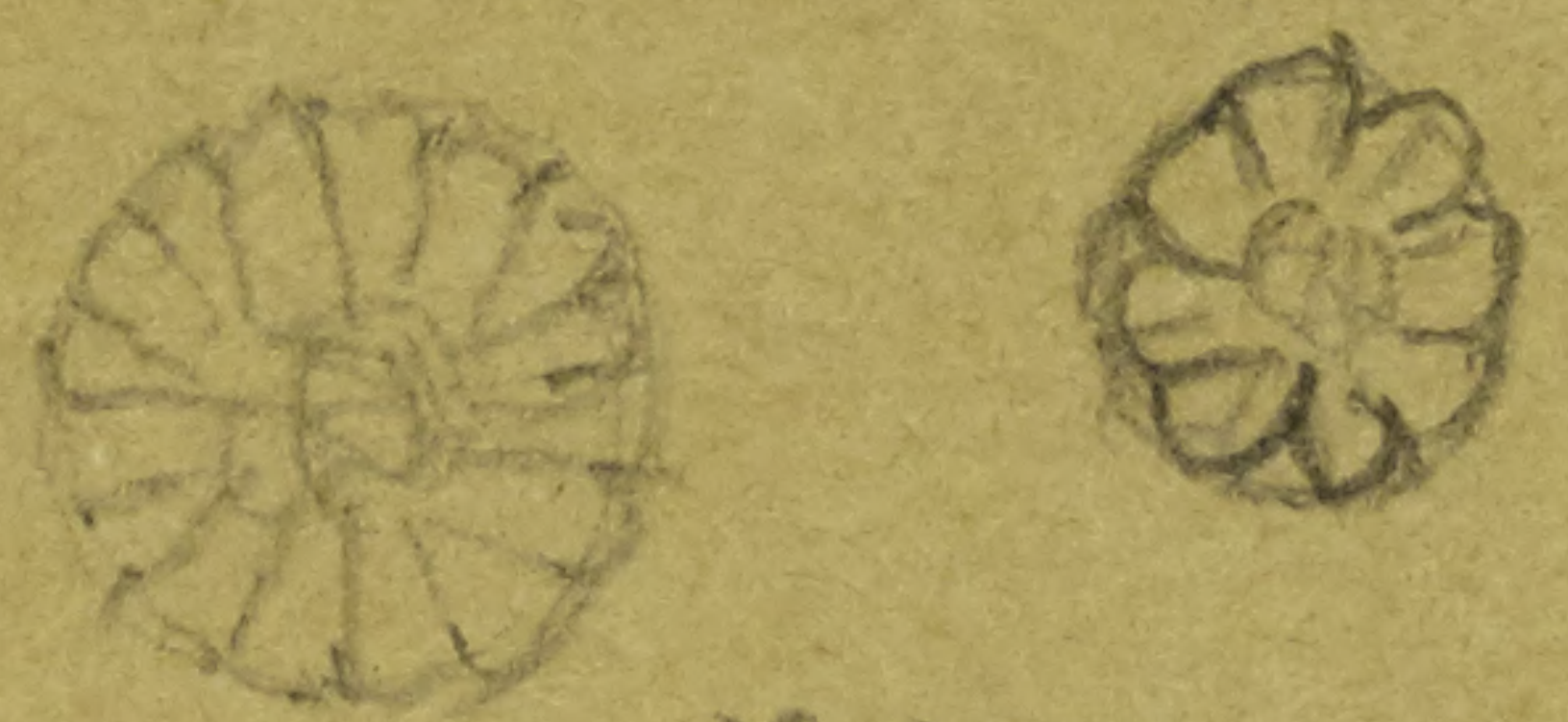
Call. verna Nov 19 1864

Milwaukee, Lapham

×30



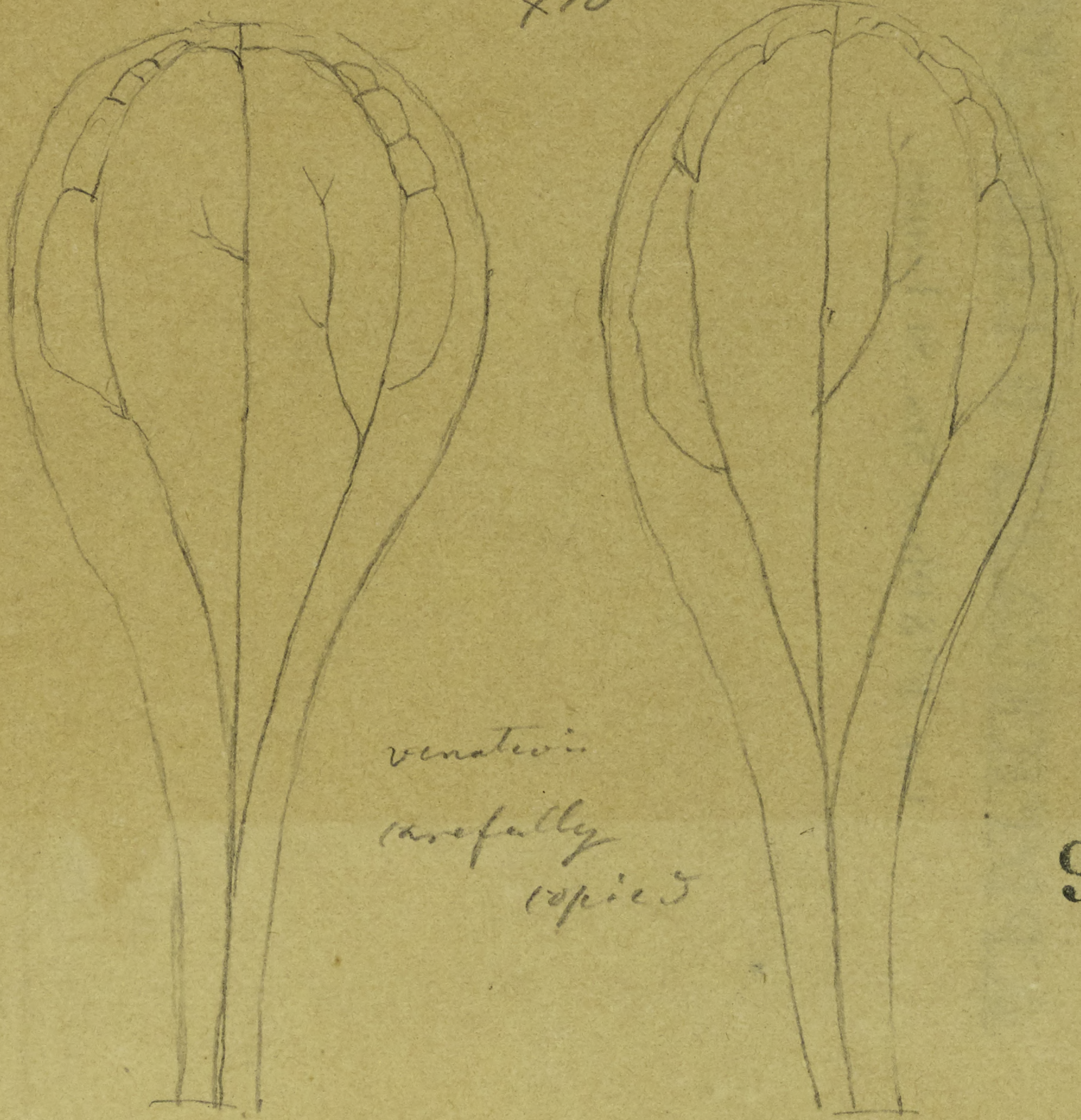
$\frac{25 \times 34}{30} = 0.8 \times 1.1$ mm



×150

Stellate hair

×10



venation carefully copied

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914A

VI. The appearance of negative electricity was connected in

1861. No. times.	1862. No. times.	
30	32	with thunderstorms.
23	28	with rains without thunder and lightning.
20	4	with dry storms (without rain and without thunder and lightning).
4	3	with snow.
1	0	with fog.
78	67	

VII. *Relation of Rain and Snow to Electricity.*

Rain without thunderstorm was accompanied

	By Positive Electricity.		By Negative Electricity.		By no Electricity.	
	In 1861.	In 1862.	In 1861.	In 1862.	In 1861.	In 1862.
January	7	5	3	2		2
February	2	1	4	1		
March		5	6	4		
April	8	6	7	11		1
May	10	7	1	1	3	1
June	7	1				3
July	2	4				3
August	3		1		1	2
September	4			1	4	8
October	3	1	1	1	7	1
November	2	3		7		7
December	2	3				6
	50 + el.	36 + el.	23 — el.	28 — el.	15 no el.	34 no el.

Snowing was accompanied

	By Positive Electricity.		By Negative Electricity.		By no Electricity.	
	In 1861.	In 1862.	In 1861.	In 1862.	In 1861.	In 1862.
January	3	9		2		
February	12	8		1		
March	3	12				
October		1				
November		4				
December	5	2	2			1
	23 + el.	36 + el.	2 — el.	3 — el.	......	1 no el.

REMARKS.

The monthly mean of atmospheric electricity in 1862 was not quite so regular as that in 1861. While in 1861 an un-

62-7

C. verna Lin
including other species
(hamulata & stagnalis)

C. verna Kützing in Reichenb. Fl. Crit. tab. 881
— Linnaea VII. (1832) 175
C. verna Hegelmaier 1864 p. 55

C. vernalis Kütz
Reichenb. Iconogr.

Diam of fruits
mm

0.8	1.0
0.9	1.1
0.9	1.0
0.8	1.0
1.0	1.2
0.9	1.1
0.9	1.1
0.9	1.1
1.0	1.3
1.0	1.2
0.9	1.1
0.8	1.2

0.8–1.0
× 1.0 × 1.3

Poll. 0.022 – 0.027
0.024

interrupted descent and ascent took place from January to December, we find in 1862 some interruptions in the steps of that ladder. The electricity in February, 1862, is about four degrees higher than that of January, April somewhat higher than March, and July is the lowest instead of September in 1861. These trifling irregularities may be accounted for by differences in temperature and relative humidity, and by a greater number of thunderstorms in 1862. January of 1862, for instance, was so unusually rainy, that its relative humidity too was unusually high, diminishing thus electricity. But the general features of distribution of electricity throughout the year are apparent in both years, and we may in that respect divide the twelve months of each year into two or three groups. Computing the months which give the highest electricity and those which give the lowest in each year, we find that in both years the months of January, February, March, April, November and December exhibit the highest, and the months of May, June, July, August, September and October the lowest electricity. The first group gives

The aggregate monthly mean of 71.5 degrees of electricity in 1861
and 74.6 " " " 1862
While the second group gives 29.0 " " " 1861
and 25.7 " " " 1862

The second group prevailed therefore in 1861, and the 1st in 1862.

Or we may divide the twelve months of each year into three groups. The first group with the highest electricity is formed by the months of January, February, November and December; the second with a mean electricity by the months of March, April, May and October; and the third with the lowest electricity by the months of June, July, August and September.

The aggregate monthly mean of

The first group in 1861 is 52.9—in 1862, 54.6
The second " " 33.5 " 35.2
The third " " 14.1 " 10.5

Thus in 1861 the third group prevailed, and in 1862 the first and second. But these differences are so well balanced throughout the year, that the mean of the whole year in 1861 and in 1862 is exactly the same, namely, 8.4. Such an identity in the yearly result, even to decimals, is of course not to be expected every year; but it seems to prove, at least, that the yearly mean of electricity is as constant as that of temperature, of relative humidity, and of atmospheric pressure.

The third table, showing the daily periodicity of atmospheric electricity, confirms the daily two maxima and two minima of electricity as an undeniable fact.

0 1 2 3 4 5 6 7 8 9 10
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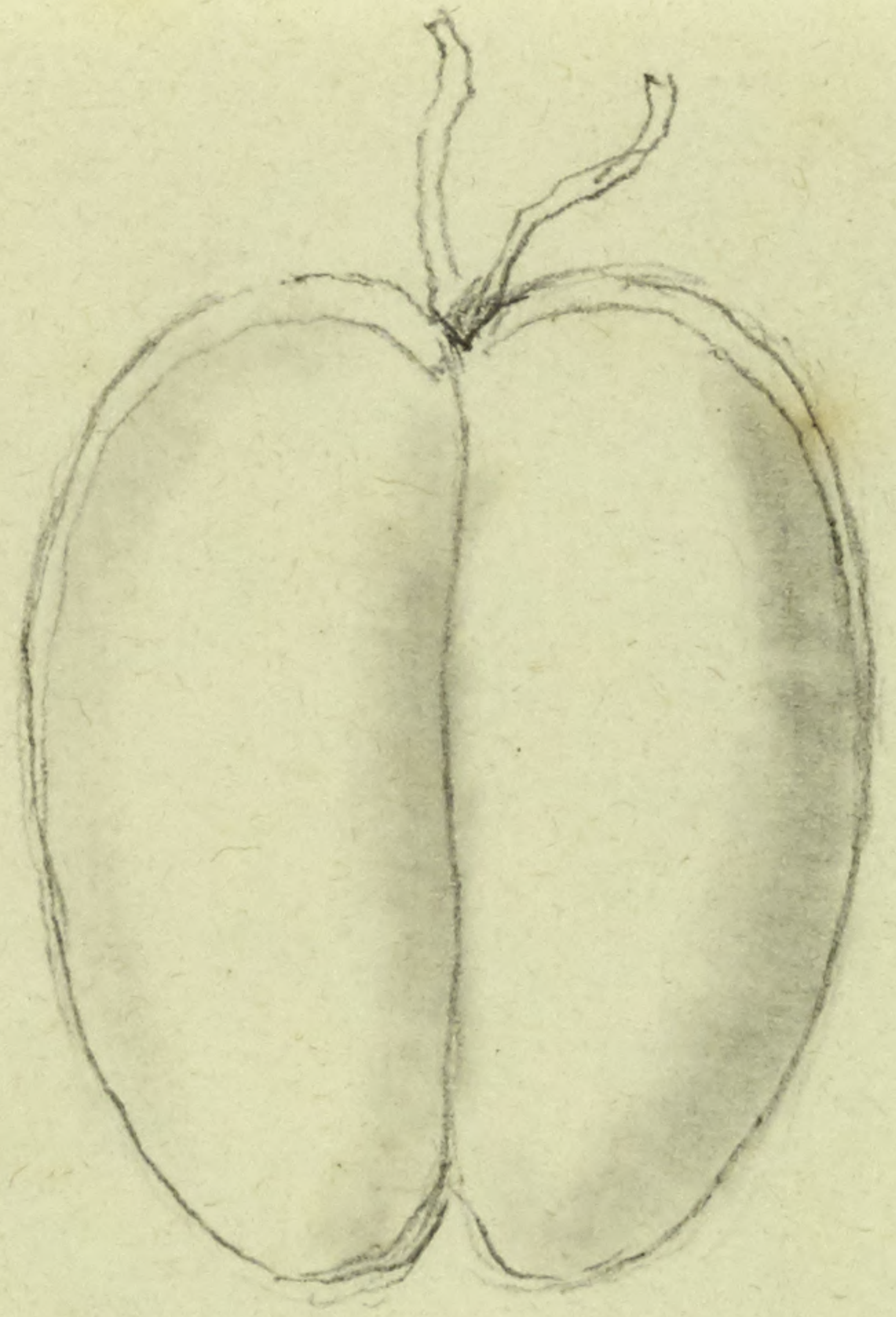
MISSOURI BOTANICAL GARDEN

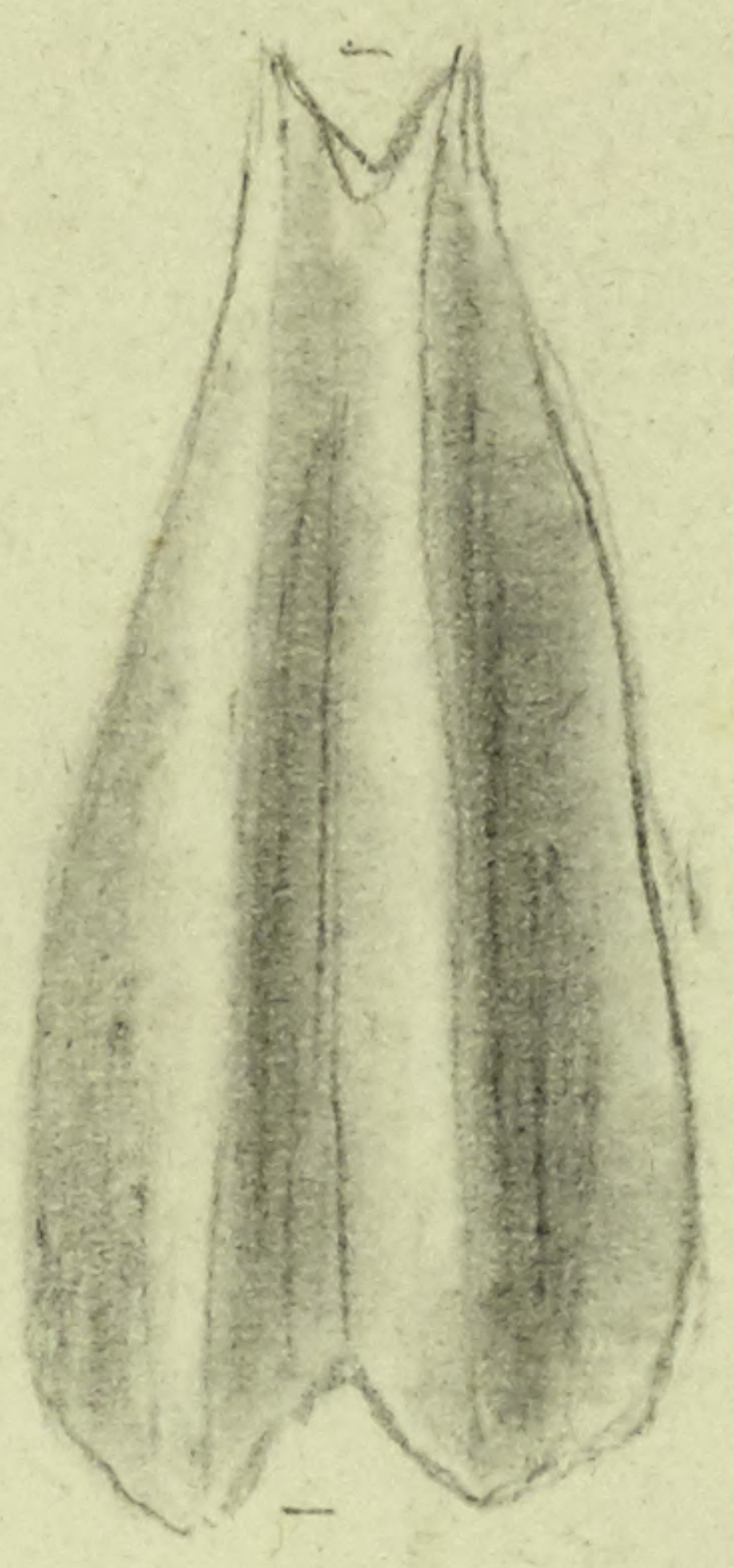
Callitriche verna

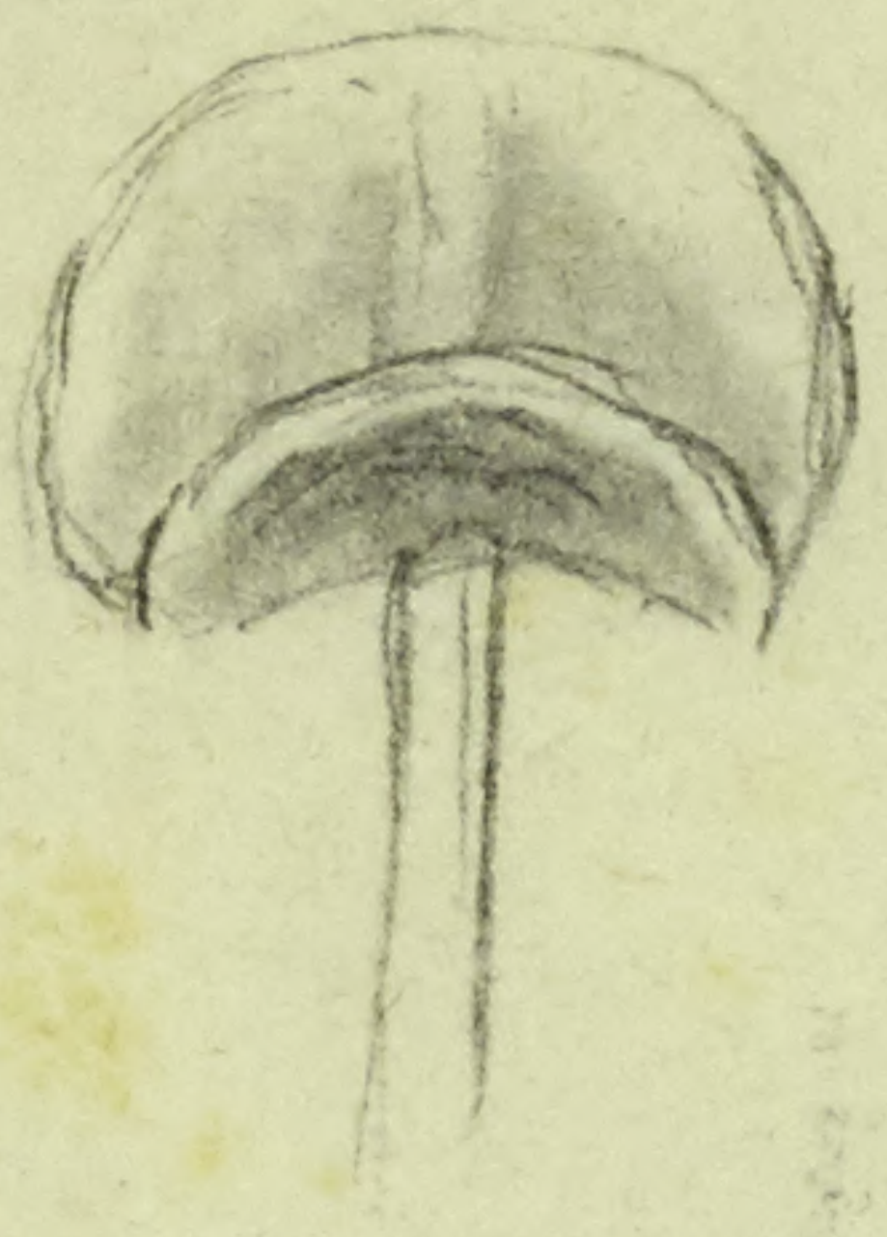
Cattaraugus Co N.Y. Sept 28 1864

G. W. Clinton Sept 23 1864

×30



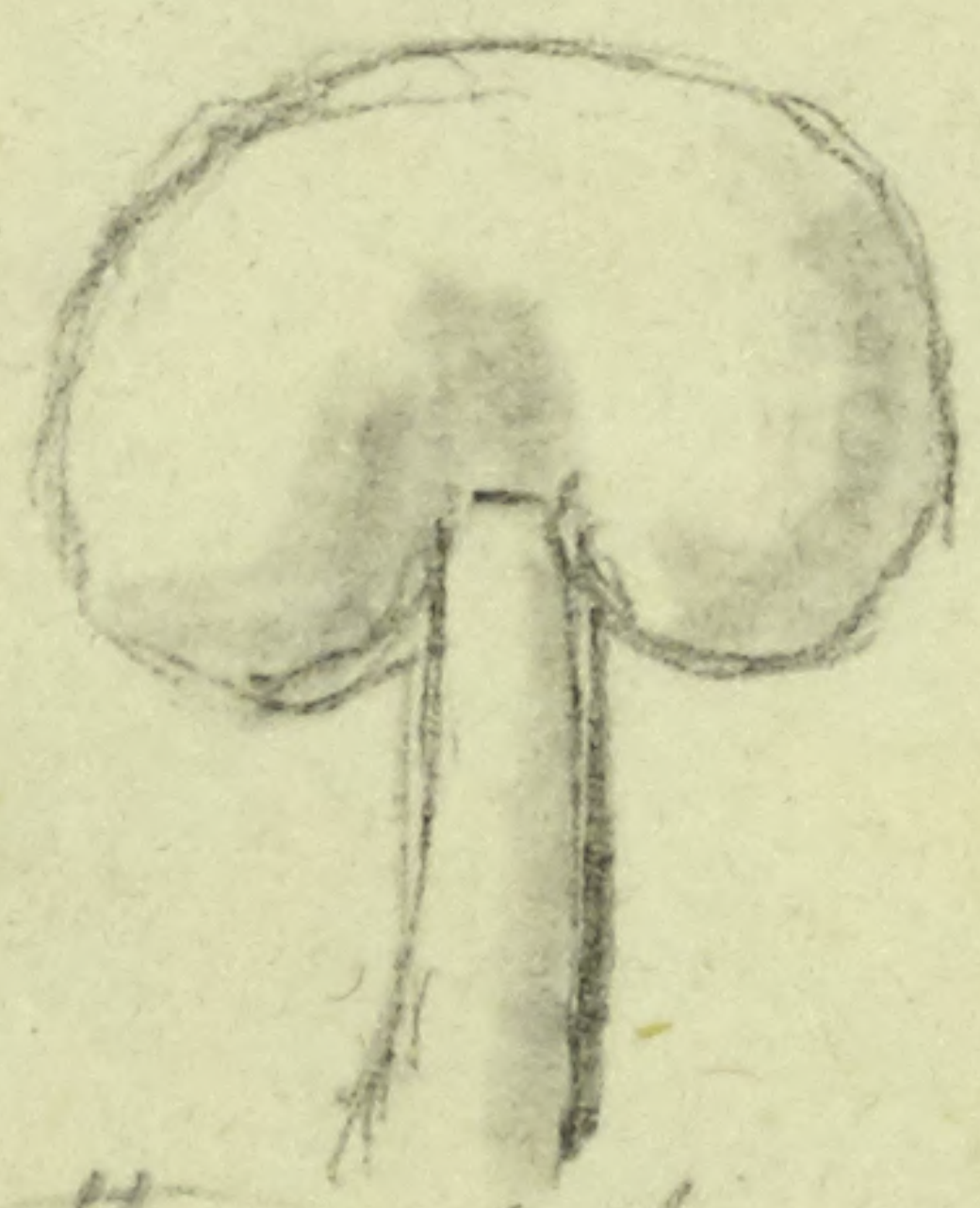




×30
open anther
effete

915

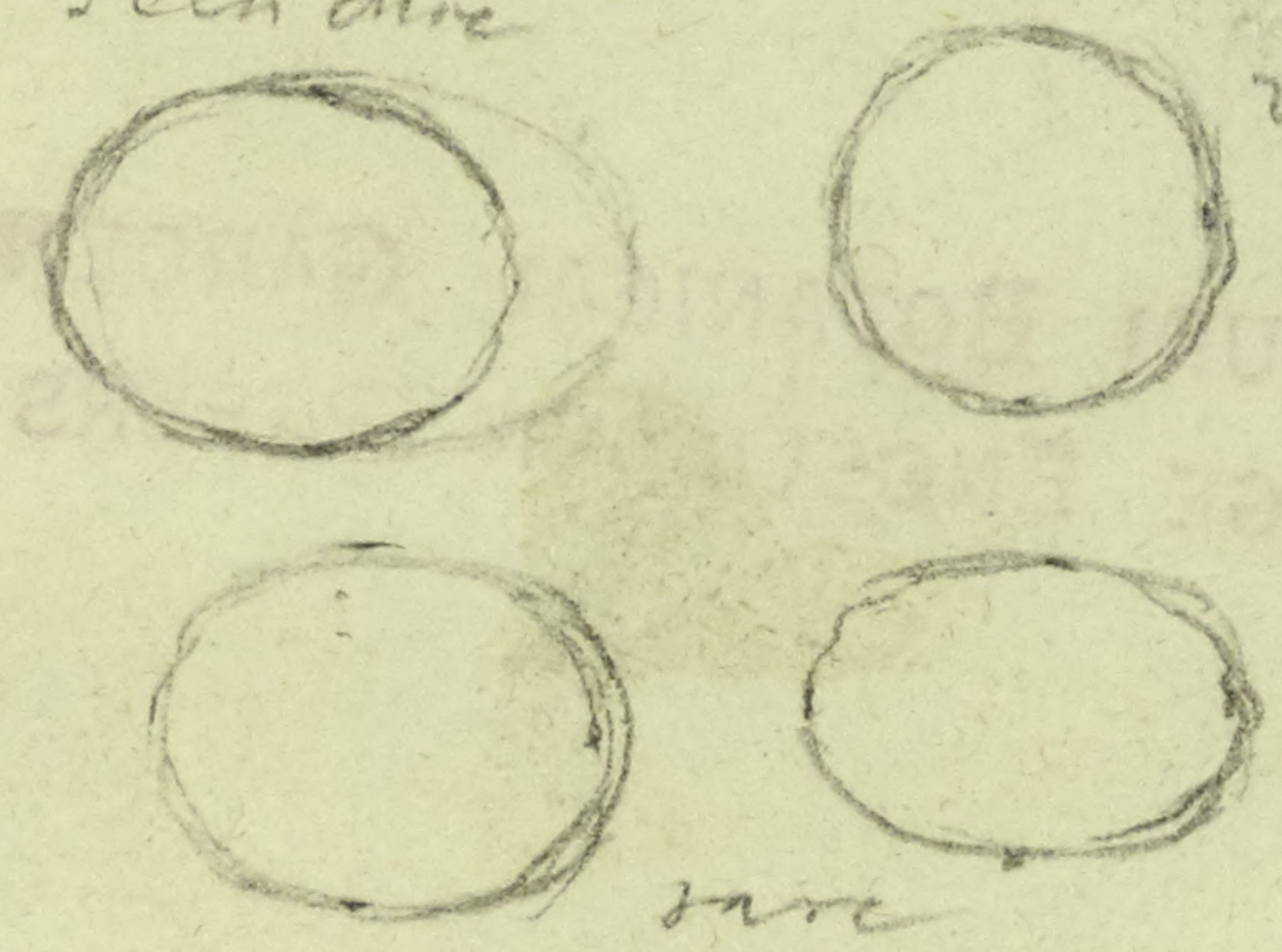
$\frac{27\times 32}{30} = 0.9\times 1.1$ mm



anther before opening

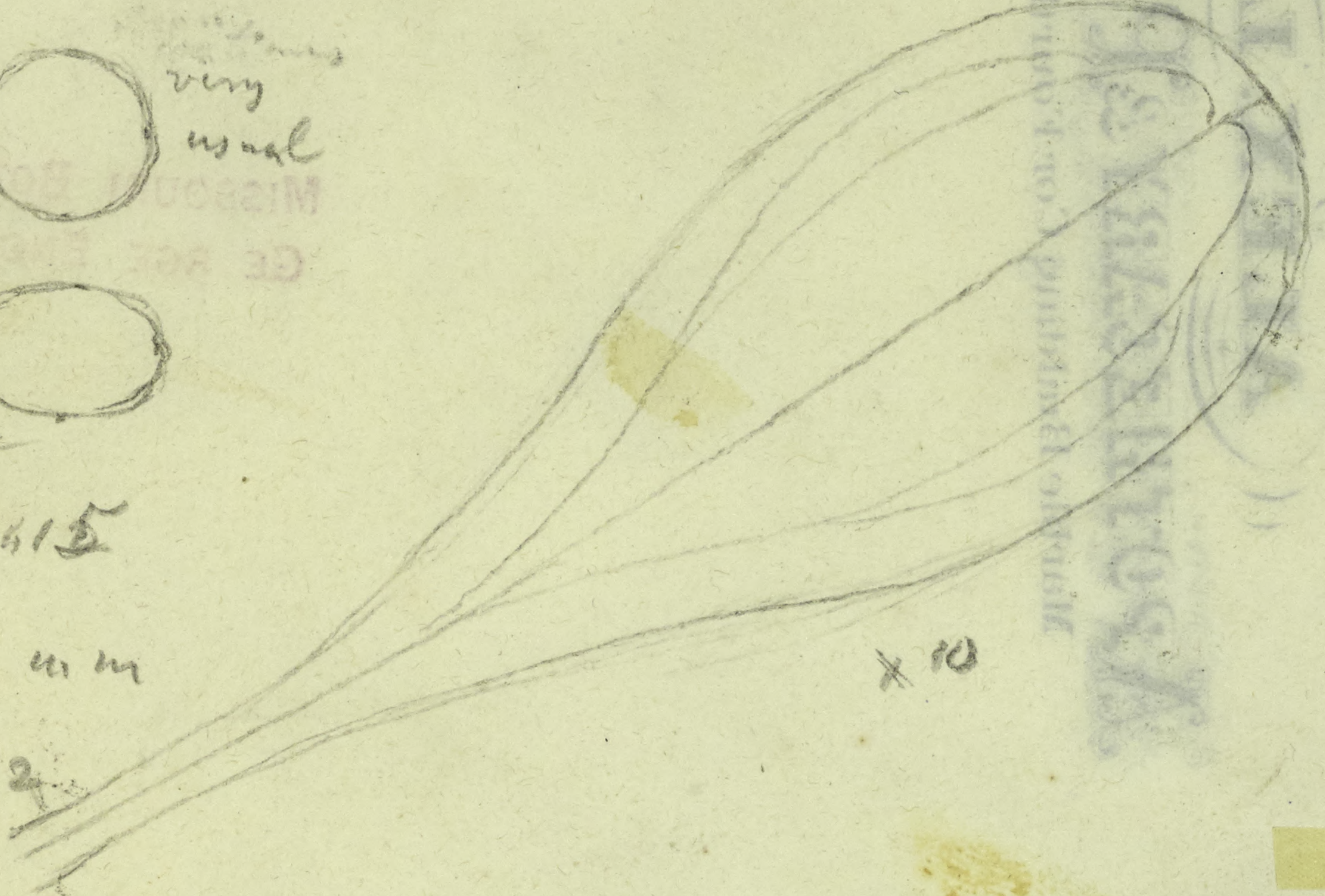
seen once

very usual



same

Pollen ×415



×10

Pollen glob. $\frac{10}{415} = 0.024$ mm

oval $\frac{12-13}{415}$ $0.029-0.032$

$\times \frac{8-10}{415}$ $\times 0.020-0.024$ mm

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Callitriche verna Sept 23 1864

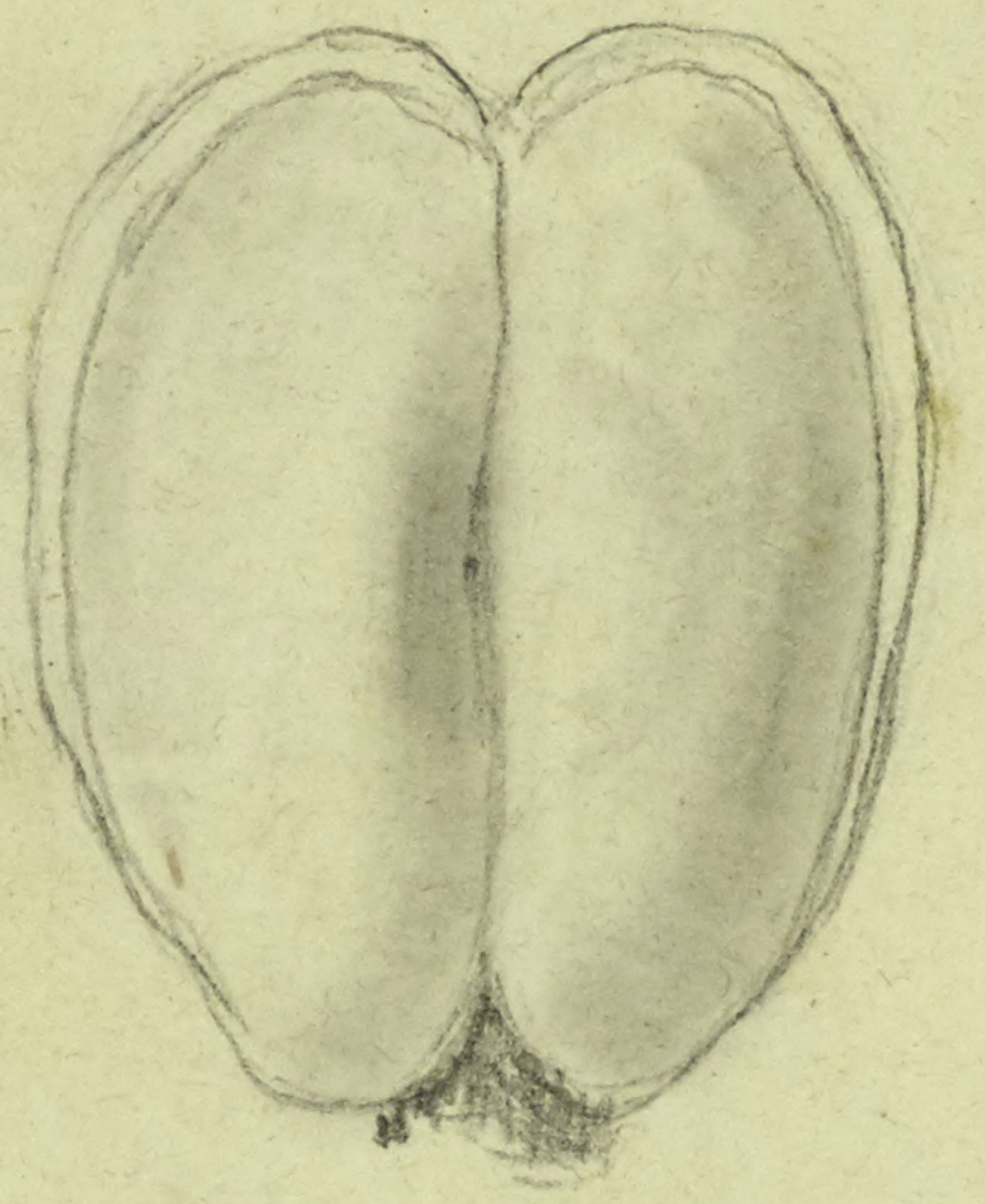
" C. minima

M. Schkuhr"

ex Hb. HBS-Mission

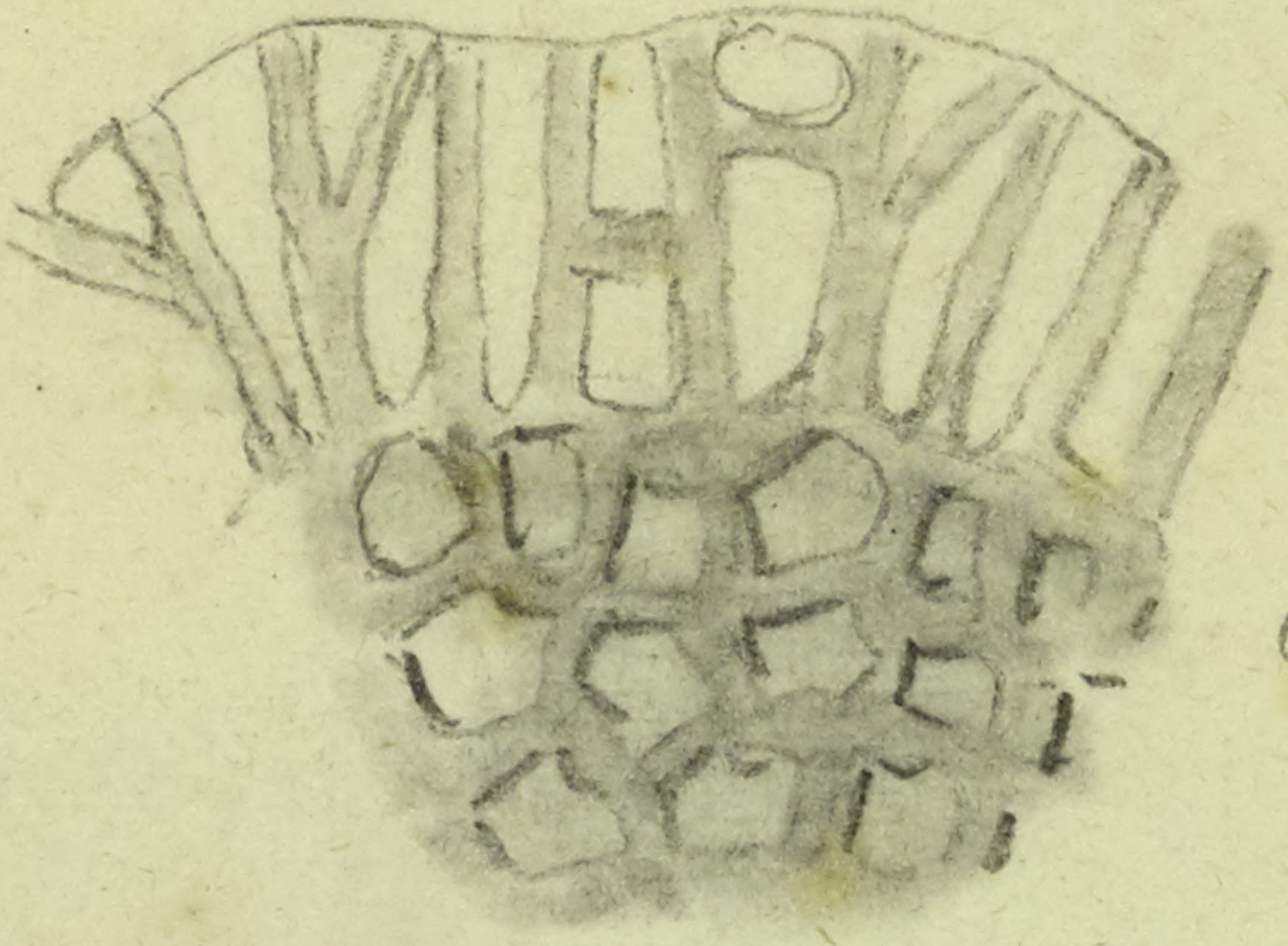
a landform of C. verna,

x30



$\frac{25}{30}$ mm broad = 0,8 mm

$\frac{31}{30}$ mm high 1,10 mm



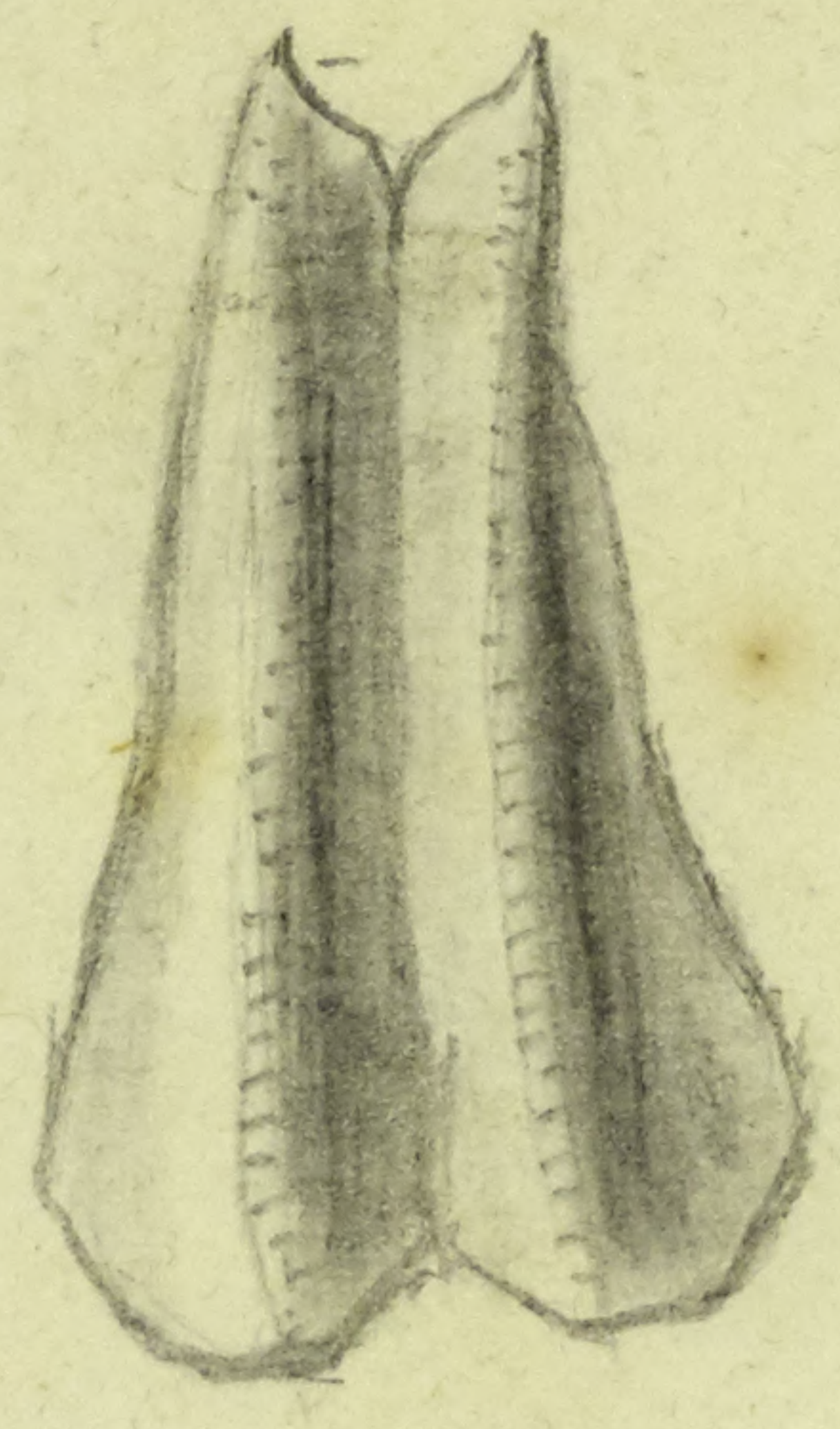
crest

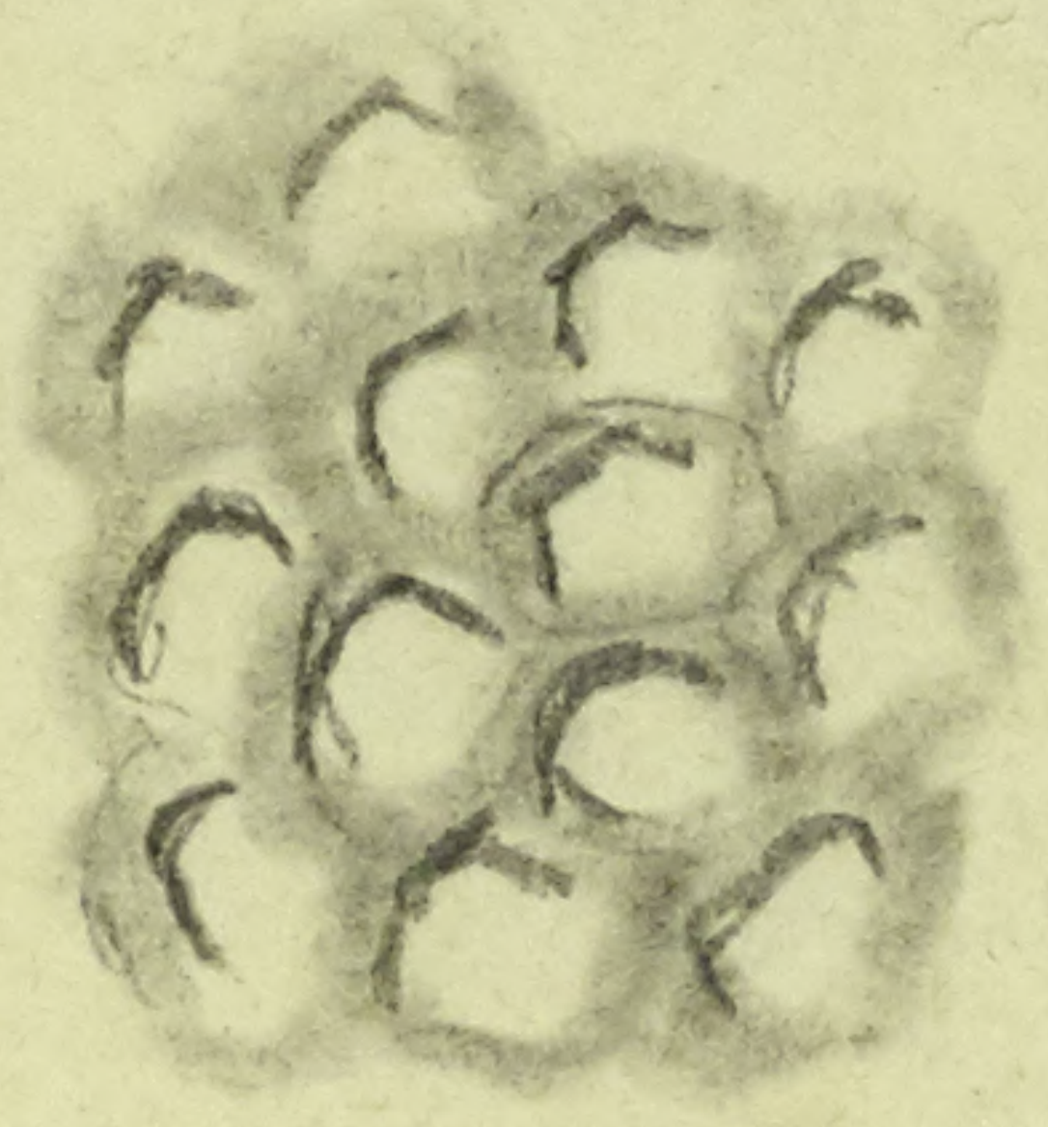
x150

radiated crest

$\frac{10}{150}$ = 0,06 mm broad

x30





x150

916

0 1 2 3 4 5 6 7 8 9 10
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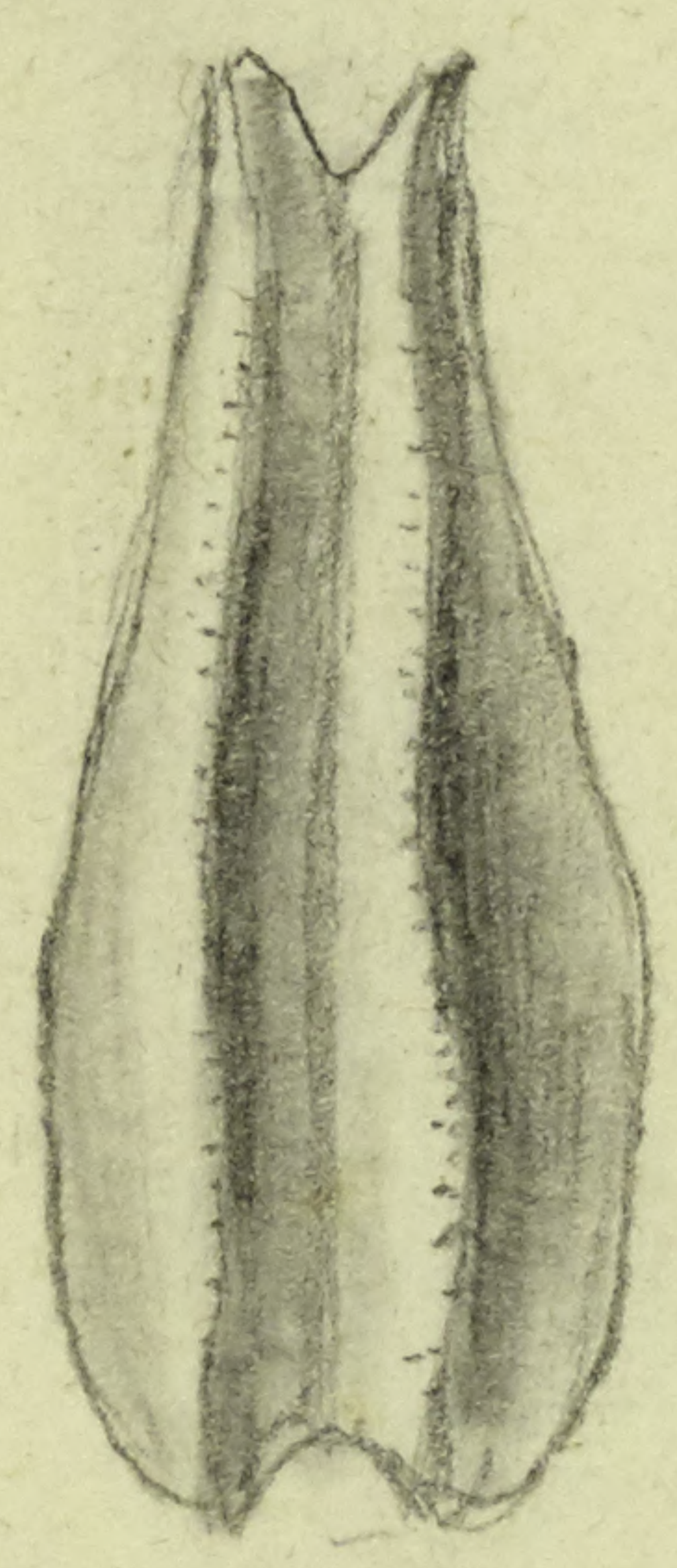
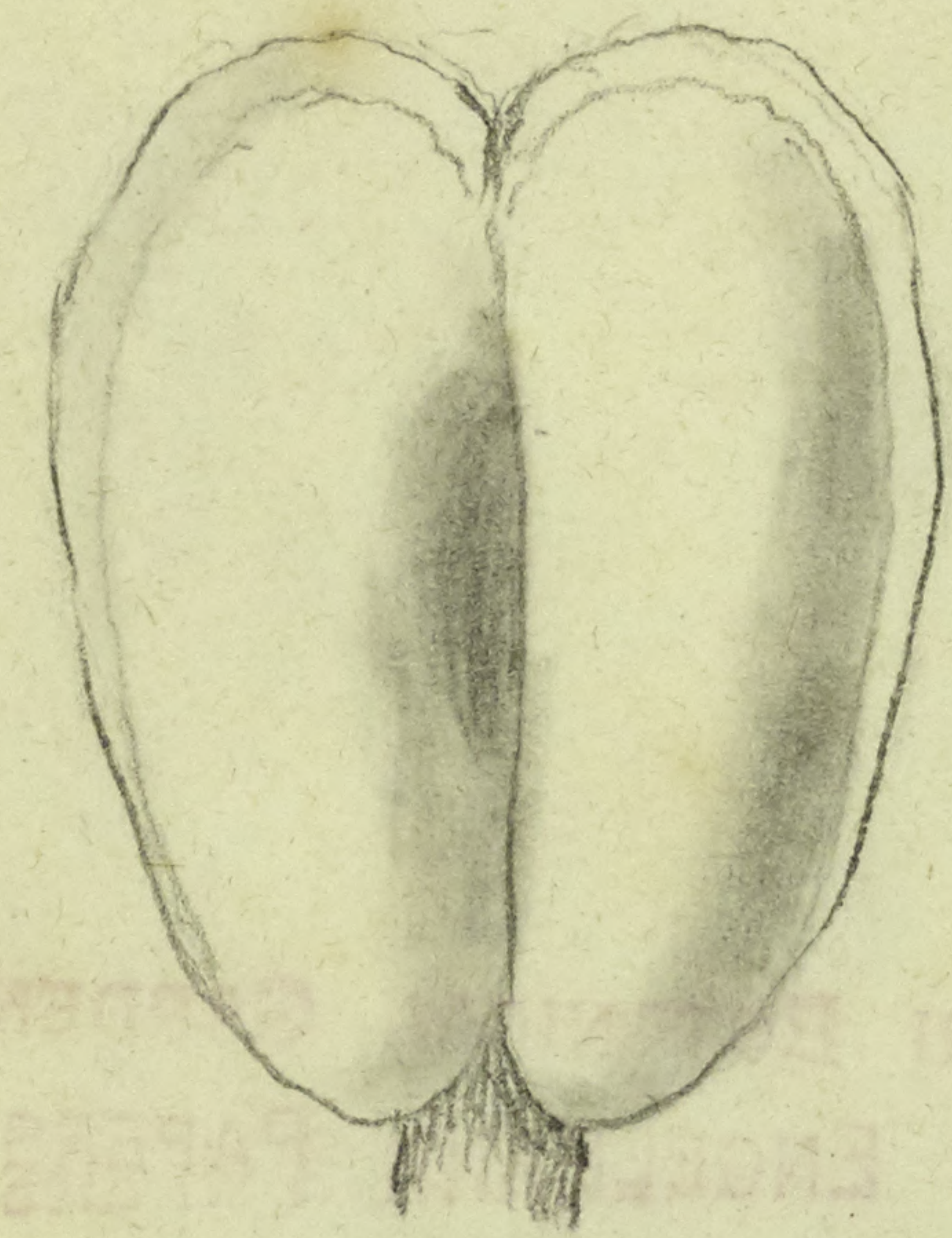
Callitriche verna   Sept 22   1864

sub nom. C. autumnalis, Petersburg, Regel
in Hb. Gray

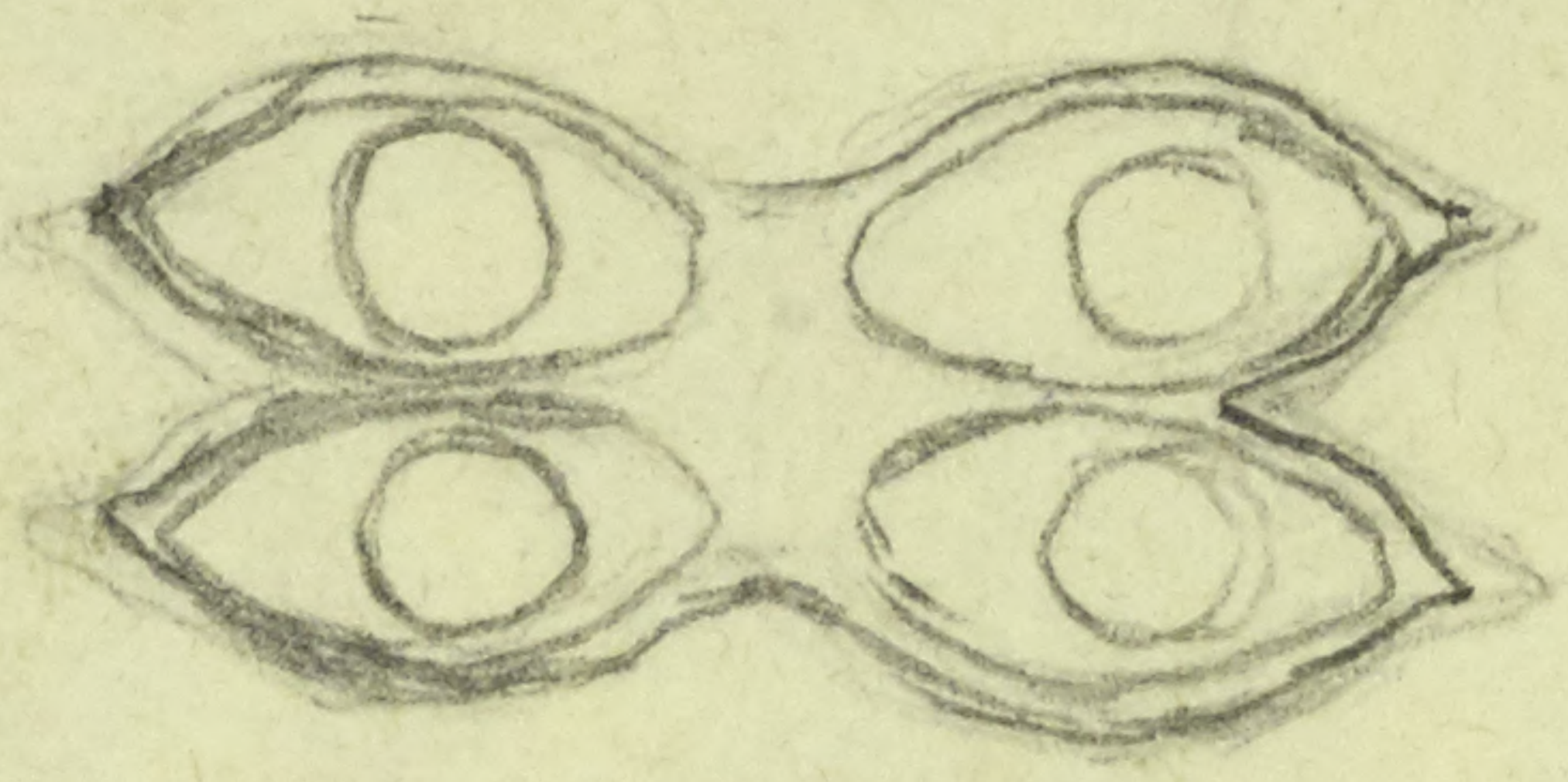




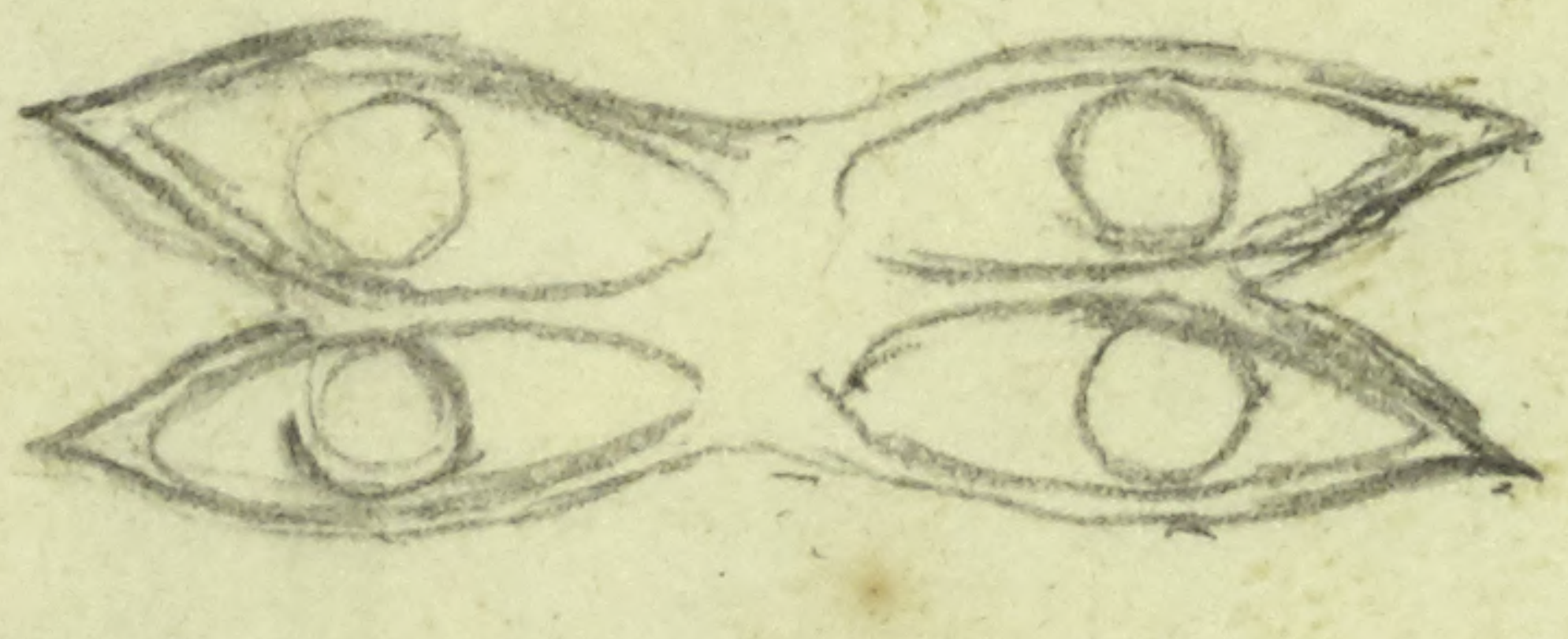
28/30 mm wide = 0.9 - 1.0

35/30 mm high = 1.11 - 1.12

917



sect of lower



of upper
part of
fruit

0 1 2 3 4 5 6 7 8 9 10
cm
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